SEP 20 1910

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SEPTEMBER, 1910

SELLING ELECTRICITY

The Magazine of Electrical Progress

I Create Sign Business For Central Stations

IN some cities it's **hard** to sell electric signs. Merchants say signs are an **expense.** The local central station solicitors may be good salesmen, but they're up against a **hard** game. Because they're trying to sell the **wrong kind** of signs on the **wrong basis.**

Now, I do not sell signs—I sell **electric advertising.** My signs are electric advertisements. They are **easy** to sell because they are what the merchants **want.**

I will **personally** teach your solicitors **how** to sell **electric advertising.** I will furnish you the kind of electric advertising that **sells.** I create electric sign business for central stations.

THOMAS E. VALENTINE,

President

Valentine Electric Sign Company

ATLANTIC CITY, N. J.

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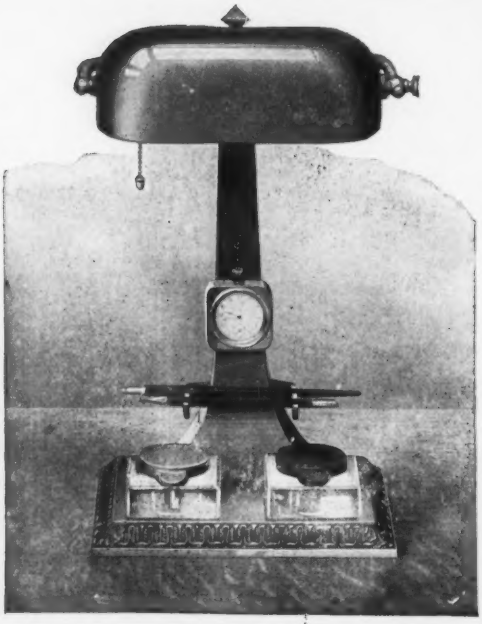


A NEW DESK LIGHT IDEA
THE

EMERALITE

"Kind To The Eyes"

A wonderfully artistic electric desk and table light. The new idea "Emeralite" shade makes these lights more attractive and more adapted to office use than any other light made.

The shade is of rich green glass outside, and pure white opal glass inside. Gives a subdued, restful, emerald light above, and focuses a bright light on desk or table top. It is not affected by heat or cold, and does not tarnish or scratch. Its smooth service prevents collection of dust, and always throws down the light where wanted.

The arm and base are finished in dull brass or statuary bronze—conforming to any office equipment.

We make the "Emeralite" in many styles—for roll or flat top desks, also for home use on pianos etc.

We cannot do justice here to the "Emeralite"—its beautiful coloring, etc., but we have a BOOKLET which shows colors, gives prices and description, etc. Write us and we will send it free.

H. G. McFADDEN & CO.

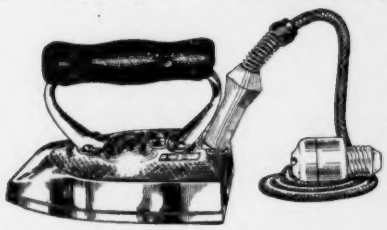
43 Warren Street New York City

Correspondence solicited with electrical supply dealers.

On Hot Tuesday Mornings

—in fact on all Tuesday mornings tell your customers what they are missing in comfort, coolness, convenience and economy unless they have an

"American" Electric Iron



For your current consuming customers you buy efficient motors and lamps. Do you buy efficient electric irons? You should.

By efficiency we mean giving an electric iron *enough wattage to make enough heat* and then so constructing the iron that this heat is *concentrated on the ironing surface* without loss by radiation from the top and sides.

Thus an electric iron of either higher or lower wattage than "American" irons may consume more current and time to do a given piece of work. How? Write us.

American Electrical Heater Co.

DETROIT, U. S. A.

Oldest and Largest Exclusive Makers in the World

1910

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1910

When you discuss and plan your Fall Lighting Campaign, bear this fact in mind—The Buckeye Electric Company can practically INSURE the success of your efforts by placing at your disposal the services of its illuminating engineers, industrial lighting experts, street lighting specialists and advertising men.

The Buckeye Electric Company's policy is to *help its customers create and develop new business;* we are not content to fight blindly for existing business. Backed by this policy, the representatives of The Buckeye Electric Company come to you as lamp-business builders, constructive salesmen, to give you in concentrated form the combined experience of a 100-brain-power organization.

No matter how large or how thoroughly equipped your own force may be, the co-operation of The Buckeye trained specialists will make the success of your year's lighting campaign more sure and the returns more prompt.

Of course the Buckeye co-operative sales plan is based upon Buckeye Lamps. We have no hesitation in saying—and no difficulty in proving—that Buckeye Quality and Service are the best in the world. Let us tell you specifically just how we can serve you.

THE BUCKEYE ELECTRIC COMPANY

CLEVELAND

CHICAGO PITTSBURG BOSTON DALLAS

This Central Station Sign is a Powerful Advertiser, for it is 72 Feet Long and *Tells a Story!*

The Lamp and Light Rays (16 ft. high) flash on in white like a Sunburst with the Filament of the Lamp in red. The Belt and Pulleys (6 ft. in diameter) are red and green lights and revolve continually. The line Light & Power flashes in one word at a time. The Company's name burns steadily. There are 2000 lamps in action.

This is a sample of Greenwood Originality—a unique design, simple yet commanding.

Just picture in your mind how such a sign would look in your own town, what the people would say about it. We can design for you something just as strong and quite as original.

Greenwood Advertising Co.

KNOXVILLE, TENN.

It's up to every Central Station man to recommend the

New Edison Storage Battery

for electric vehicle equipment

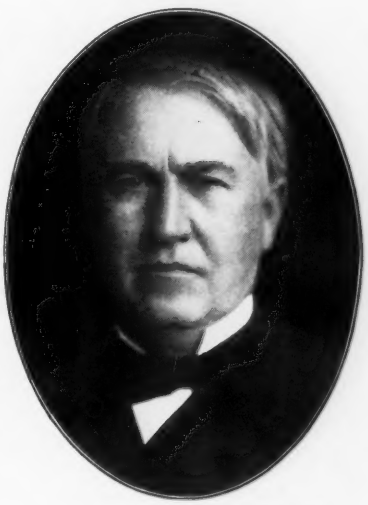
THIS is the Battery on which Thomas A. Edison worked nine years, and of which he said, "It will be ready when it is right." It is ready *now*.

Watch the performances of the Detroit Electric and the Bailey Electric in the pleasure vehicle field—and the Lansden truck in the commercial field. These vehicles are giving practically double the mileage of vehicles equipped with lead batteries.

Edison equipped, there will be more electrics on the road than ever before. And they will be the vehicles that will *stay on the road* while the others are in the repair shop.

The Edison has nearly double the capacity of a lead battery of equal weight.

It is not injured by overcharging, by too rapid discharge, by complete discharge or by standing idle either charged or discharged. You don't have to make an electrical engineer of every customer to show him how to take care of his battery, when you recommend the Edison as equipment for his car. Write us for complete information today.



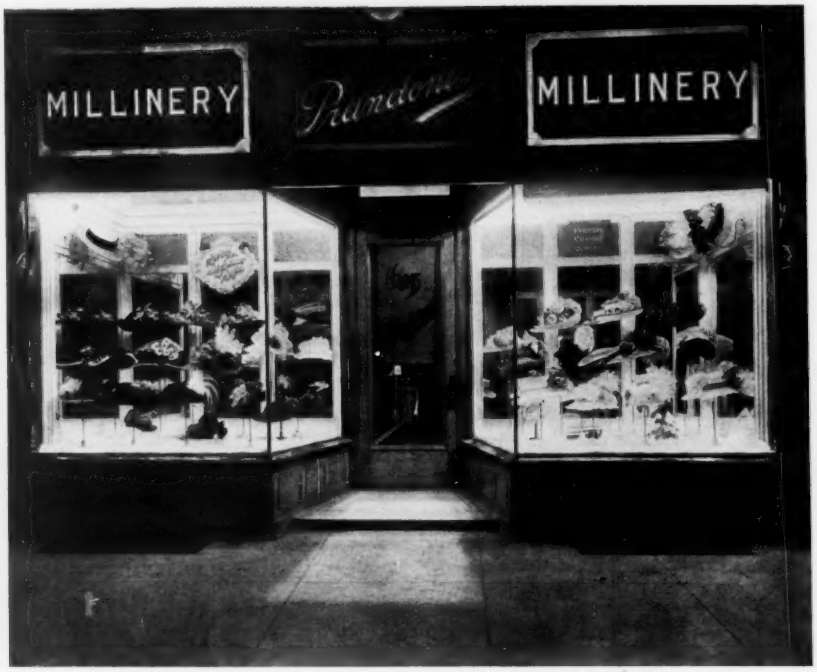
TRADE MARK

Thomas A Edison

Edison Storage Battery Co.,

123 Lakeside Avenue, ORANGE, N. J.

Do You Sell Electric Advertising?



This Window Requires but 500 Watts. The Perfect Illumination is Due to Holophane Steel Reflectors.

"Point of view" makes quite a lot of difference. For instance, window lighting is an expense.

But ELECTRIC ADVERTISING is an INVESTMENT that pays big dividends in sales and profits.

Let the Holophane man show you how to sell, plan and install the kind of ELECTRIC ADVERTISING that pleases the merchant and increases your load.

HOLOPHANE COMPANY

SALES DEPARTMENT

NEWARK, OHIO

New York Boston Philadelphia Chicago San Francisco

The Ham Attachment

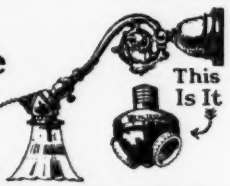
Most convenient wiring device brought out in the last decade

For sale by all jobbers

Patented November 17, 1908

E. W. HAM, *5 Barton Place* **Worcester, Mass.**

At Home
At the Office
In Any Place
of Business



BENJAMIN
PLUG CLUSTER

is a great convenience because it gives you two outlets where you have had but one, doubling the capacity of your sockets by doing the work of two. You may attach any other electrical appliance that you wish and burn your lamp at the same time. It requires no extra wiring—*you simply screw it into the socket.*

For sale by all Electrical Dealers or sent postpaid on receipt of price, 75c.

BENJAMIN ELECTRIC MFG. COMPANY
507 W. Jackson Blvd., Chicago

Combination Pole
Adopted by

LINCOLN NEBRASKA

POUGHKEEPSIE N. Y.

Design 41008

Send for Booklet
Our Product is the Standard

Elmer P. Morris Co.
94 West Street, New York

Are You Insured?

In other words, are you sure that your present system of rates is designed to protect you against excessive loss of revenue when the HIGH EFFICIENCY DRAWN WIRE LAMP is on the market?

Many central station managers feel, and possibly quite rightly in the majority of cases, that their present methods are taking care of the High Efficiency lamp situation. Some indeed **say** so but do not **quite feel** so. They are gifted with vision longer than ordinary.

But the High Efficiency lamp situation of **today** is not guaranteed to exist for many more **tomorrows.**

The fragile lamp ranging from 100 down to 32 C.P. produced more light with little or no diminution of current consumed. On the contrary, in many fields the tendency was the other way. The vast improvement in quality of light was a great help in extending the field against other illuminants.

Then the 25-Watt lamp appeared and in spite of its even greater fragility, pushed its way steadily into public favor, but in a different manner from its predecessors. IT gave 25% more light than the old carbon 16 with only a little over ⅓ of expenditure for current, and the ordinary people quickly saw the point.

Soon comes the **Drawn Wire** lamp of equal efficiency to the fragile ones. What is going to keep the public demand away from 16, 10, 8, 5, 4 and 2 C. P. lamps? And if the demand arises, will not the supply follow the demand as it always has done?

Your lighting revenue, especially residential, will have a dent put into it and it is your chance even at this late date to prevent the dent or find material in the shape of new business to level it up.

THE MAZDA CONTROLLED DEMAND RATE IS A MEANS TO THAT END—AND AN EFFECTIVE ONE

Our Demand Limiting Device is the implement which makes the M. C. D. rate possible and used in combination with the Integrating Wattmeter, can be made to develop the highest type electrical service contract.

A post-card today will bring you printed matter on the subject and if you ask for it, a sample of our instrument for 30 days' trial, with full directions for operating it. Address

Henry Thermo-Electric Company

No. 3 Scott Ave., Newport, Vermont

SELLING ELECTRICITY

VOLUME VIII NUMBER 2

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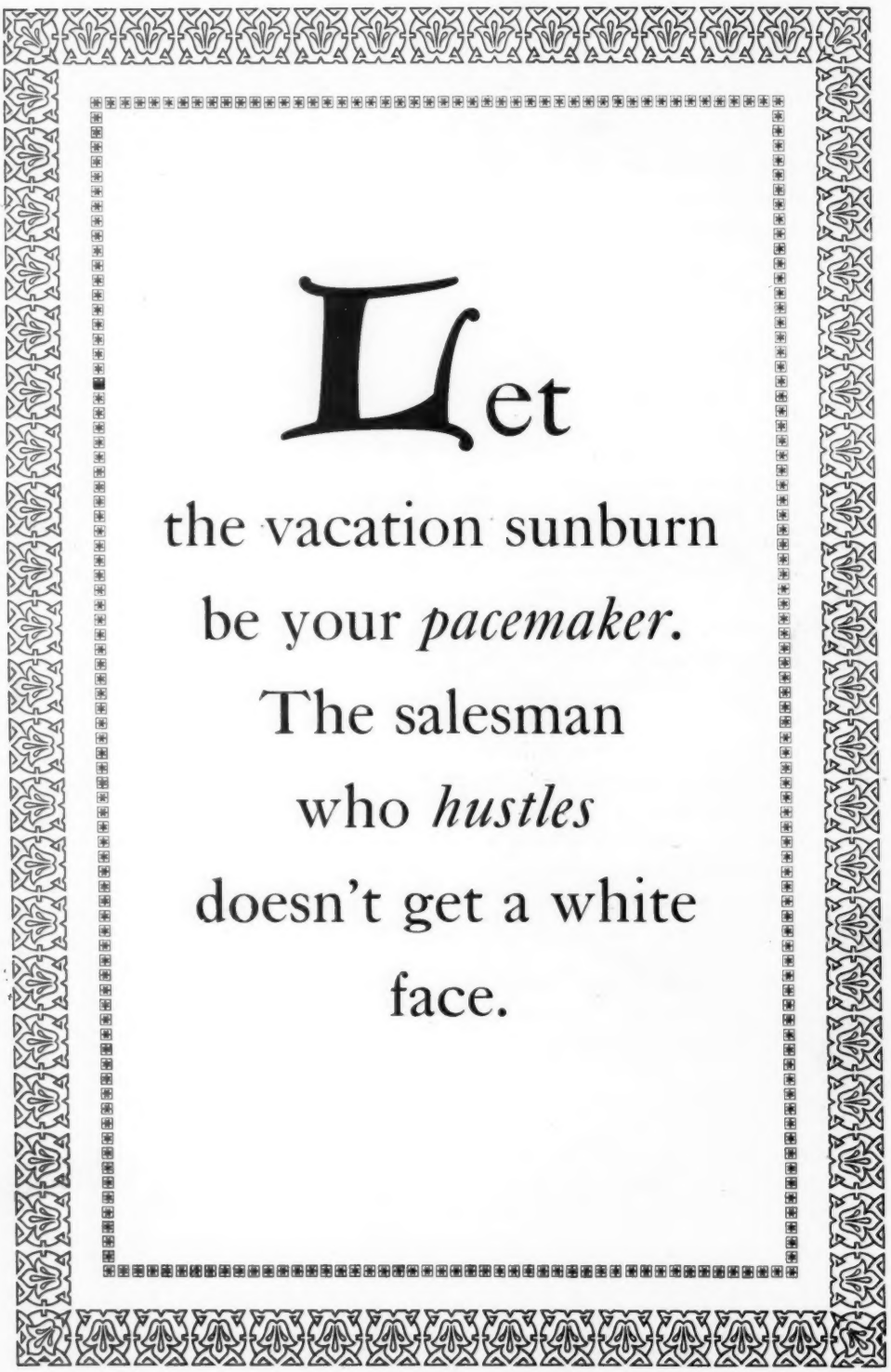
Let
the vacation sunburn
be your *pacemaker.*
The salesman
who *hustles*
doesn't get a white
face.

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SELLING ELECTRICITY

Edited by FRANK B. RAE, Jr. EARL E. WHITEHORNE, Managing Editor

Digging Subways by Electric Power

How the Motor has Supplanted the Engine in the Excavating of Brooklyn Subways

By Harry R. Stokes

As soon as it became definitely known that the underground railway system of New York and Brooklyn was to be immediately extended by the construction of a new subway under Fourth Avenue, Brooklyn, the Edison Electric Illuminating Company of Brooklyn took steps at once to insure the use of electric power to as great an extent as possible. As an assistant power engineer with the Edison Company the writer was detailed to develop the prospect. The first step, of course, was to secure a map of the proposed subway route and as soon as the contracts were awarded and announced, we got in touch with the successful bidders. In some cases the bids were bought from the bidders by other contractors, and it was necessary to follow up these transactions until the final operating contractor was reached.

Figure 1. Bird's-eye View of Subway Cut

There was practically no available data by which to develop our proposition as applied to this particular service, except as a straight power problem, at our regular scale of rates; though there are, of course, many inherent advantages of the electric motor which appeal strongly in such a situation. So we just talked power to them and they accepted our statements largely on our own responsibility, to the extent of experimental installations. Only one of the contractors, the E. E. Smith Company of Philadelphia had had any previous experience in the use of electrical apparatus in subway construction, and it was necessary in this case to supply current adaptable to old machinery which had been used in tunnel work in Philadelphia and transported to Brooklyn.

As the weeks went by and this preliminary apparatus demonstrated its ability and superiority over steam equipment, new machinery was bought so that each contractor before the work was thoroughly under way had

practically tripled this original installation and in some cases gone even further. The Bradley Contracting Company for several weeks operated one section with steam apparatus in direct competition with their first installation of electricity. This comparison was instrumental in increasing their original electrical installation four-fold. From that time on the Brooklyn contractors have taken this innovation under their own protective wings, developing its heretofore unforeseen advantages so that I believe it is not a far-fetched prophesy to say that the future subways will probably be electrically constructed.

Naturally, one of the most important items of cost in the building of a subway is labor, and in the past, except for a few isolated cases, the principal labor economies have been effected by the use of steam excavating apparatus. In the process of excavation the electrical equipment introduces one very valuable element of economy over steam in that it reduces materially the time required for raising a loaded bucket out of the pit and carrying it over to the dump. With a steam operated cable way, it is necessary for the engineer to put on brakes and stop his machinery when the bucket is brought to the level, before it can be sent on to the loading chute. A good part of one or more minutes is lost in this change over. The electric cable-way motor, however, runs continuously from the time the bucket leaves the ground until it is stopped at the dumping point, which probably increases the number of buckets which may be handled by one in ten. In the course of the day's work this is considerable.

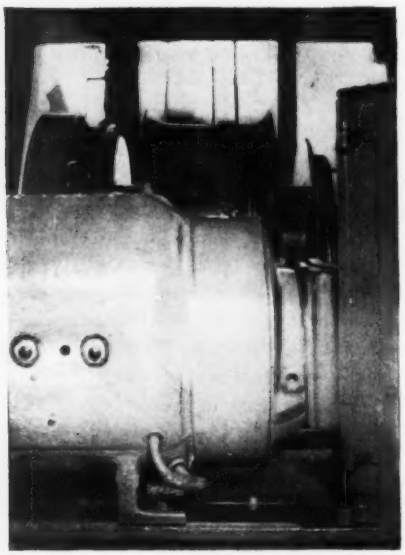


Figure 2. Motor-Driven Endless Cable Drum

Four-fifths of this subway construction work now under way is being done electrically, since the contractors have not only found electrical apparatus more easily operated and better suited to their needs, but a material saving is made over steam, owing to the rates now quoted by the central station. A synopsis of the Brooklyn Edison Company's rates for this class of work is as follows:

"Ten cents per kilowatt hour for the first 25 hours (or fraction thereof) per month use of the maximum demand.

"Five cents per kilowatt hour for the second 25 hours (or fraction thereof) per month use of the maximum demand.

"Three cents per kilowatt hour for all current furnished in excess of fifty hours per month use of the maximum demand.

"Whenever the portion of the bill which is figured at 3 cents per kilowatt hour shall exceed

$25 the discount on such portion shall be 5 per cent.
$50 the discount on such portion shall be 10 per cent.
$150 the discount on such portion shall be 15 per cent.
$200 the discount on such portion shall be 20 per cent.
$300 the discount on such portion shall be 30 per cent.
$400 the discount on such portion shall be 40 per cent.
$500 the discount on such portion shall be 45 per cent.
$1000 or over, the discount shall be 50 per cent.

"The term 'maximum demand' as used in this contract shall be construed to mean the maximum kilowatts used at one time during the period covered by a bill for electricity as determined by assuming the maximum demand to be equal to a percentage of the capacity in horsepower of motors installed as indicated by the manufacturers' standard nominal ratings, such percentage varying according to the following schedule:

Installations under 10 hp., where only one motor is used, 85 per cent.

Installations under 10 hp,, where more than one motor is used, 75 per cent.

Installations from 10 hp. to 50 hp, both inclusive, irrespective of numbers of motors, 65 per cent.

Installation over 50 hp., irrespective of numbers of motors, 55 per cent."

From this it can readily be seen that a great inducement is held out to the contractors to use electrical apparatus on an eight or nine-hour day where the cost per horsepower hour is lower than can be obtained by the use of an ordinary contractor's steam plant. Where a night shift is necessary, as is the case on a great deal of construction work, it is possible to bring the cost per horsepower hour to less than two cents.

The accompanying illustrations are reproduced from photographs taken along the line of excavation:

Figure 1 shows a view along Fourth Avenue where five electric cableways are in operation equipped with 40 hp. Westinghouse railway type, series wound motors direct connected to Lambert double drum cableway hoisting engines. This type of apparatus is especially suited to subway construction work, as it is not only used in excavating but handles timbers for supporting the sides, places steel construction, and finally distributes the concrete. Under average working conditions these cableways are capable of taking from a timbered cut and loading on wagons 175 yards per day.

Figure 3. Portable Electric Derrick

Figure 2 shows the endless cable drum of a hoisting engine, with Westinghouse railway type motor in foreground. These cableways span a cut of 1200 feet and in some places it is also necessary to span street car crossings and open streets, for which they are especially adapted, allowing work to be carried on, on both sides of open streets. This is possible owing to the fact that the carriage is always in

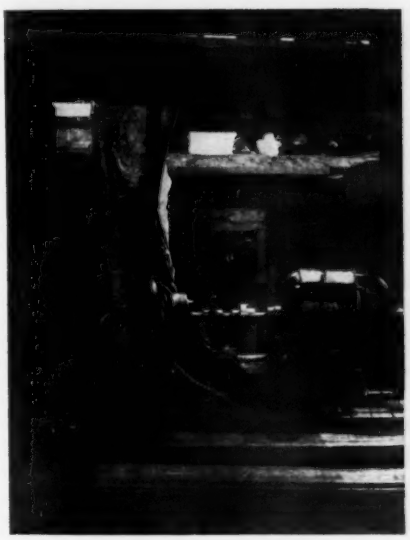


Figure 4. Motor-driven Pump

full view of the motorman, except when being lowered into cuts and is under such perfect control, that a loaded bucket going at full speed can be brought to a stop almost instantaneously. The brake is applied directly on the endless cable and hoisting drums by a foot lever and is not susceptable to the disadvantages of a car on rails as far as braking facilities are concerned.

The Bradley Construction Company

Figure 5. Temporary Meter Box

which operates the above cableways is also using electric concrete mixers, and electric pumps for drainage. Also, for unloading material at their dock, two 80-hp. electric derricks have been installed, making approximately 500 horsepower furnished this contractor from the Brooklyn Edison Company's power circuit.

In Figure 3 will be seen a view of a section of the Brooklyn subway being built by the E. E. Smith Contracting Company, of Philadelphia. Here is shown twelve portable electric derricks fitted with Lidgerwood double drum swing-gear hoisting engines, directly connected to 25-hp. General Electric motors. These derricks travel on iron rails, which are shifted as the work progresses. This section is 3580 feet in length, and is divided up equally among the twelve derricks which take care of their respective sections in their entirety, traveling from one end to the other as the work demands.

Figure 4 shows a four-inch Lawrence centrifugal pump direct connected to a General Electric 10-hp. motor, two of these pumps being used in this section of the Brooklyn subway for the purpose of drainage. This section is 4,000 feet long and is also being built by the E. E. Smith Contracting Company, with apparatus similar to that just mentioned, except that 220-volt direct current is supplied, in place of the 550-volt direct current used on the other section. In both sections, the E. E. Smith Contracting Company has a connected load of approximately 800 horsepower, including concrete mixers, derricks, pumps and machine shop equipment.

Figure 5 shows how the central station supplies each section from a meter box. Wires are run overhead along the subway route convenient for taps to be made wherever apparatus is desired.

Changes in Elmira

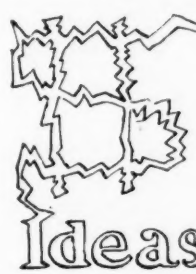
Mr. A. R. Wagar, formerly connected with the Commercial Department of the Colorado Springs Light, Heat & Power Company, has been elected to succeed Mr. Frank Murphy as manager of The Commercial Department of the Elmira Water, Light & Railroad Company. Mr. Murphy has recently been made manager of the Altoona Gas Company. Mr. Ralph Andrews has been engaged as a salesman in Elmira. This company is soon to occupy a new six-story office building located on the corner of Lake and Water Street.

"For Memphis"

Mr. V. A. Henderson, Manager of the Commercial Department for The Merchants Power Company of Memphis, Tenn., has been making a strong campaign for the last year to create a competitive interest in Electric Advertising among the merchants. The watch word has been "For Memphis," and much progress has been made.

Recently Mr. Henderson had a photograph taken at dusk, looking down the main street of the city and showing the solid wall of signs against the still unlighted windows. This photograph he had mounted on a large card bearing the inscription: "What the Merchants are Doing For Memphis." The effect is very striking and is proving a very valuable aid to the salesmen.

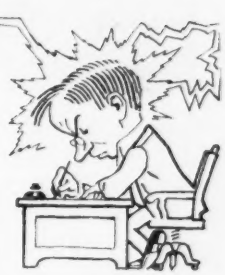
WHAT THE MERCHANTS ARE DOING "FOR MEMPHIS"



ELECTRIC FANS IN MANHOLES

NORMAN B. HICKOX

Manager New Business, Muskogee Gas & Electric Co., Muskogee, Okla.



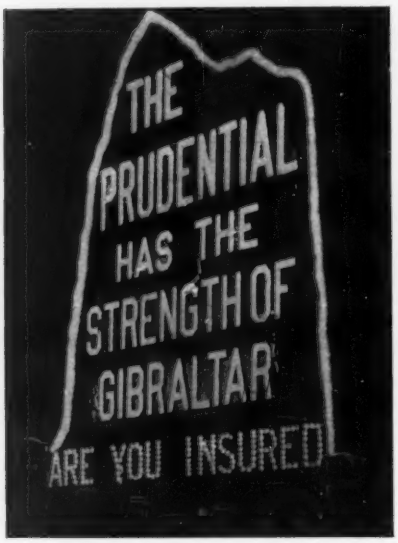
The local telephone company, whose down-town wires are underground, has recently been induced to run a waterproof circuit through all its underground conduits, connected at a central point to our lighting lines through a meter. This enables their employees to use any lights, fans, electric furnaces and soldering tools in any of their manholes, adding materially to the comfort of the workers.

The telephone company has sixteen manholes, and uses about two hundred kilowatts per month in this manner. I have recently seen linemen run reinforced cords up out of a manhole and use the fans and irons up on the poles, while working on their cable terminal and junction boxes.

Gibraltar Illuminated

"World's Highest Electric Sign," Erected by the Prudential

The Prudential Insurance Company of America, with home offices at Newark, N. J., has made another big advertising hit by erecting at Hoboken, N. J., directly opposite New York City, a great electric sign representing the Rock of Gibraltar. The sign operates automatically and in addition to flashing the Rock, bears the company's slogan: "The Prudential Has the Strength of Gibraltar." It is mounted on top of the New Terminal Building at Hoboken, and the top of



the Rock is nearly 200 feet above ground. Six miles of wire were used in connecting the lights and the letters forming the word "Prudential" are ten feet high and built to withstand a wind pressure of 250 tons. Three thousand electric lamps are used.

Below the Rock an automatic talking sign changes constantly, flashing forty-eight statements regarding The Prudential.

The sign was built by the Electric Carriage Call and Specialty Company of New York, who made a close study of the topography of Gibraltar in order to give a correct delineation of the Rock. The Prudential's "Gibraltar" is now one of the most striking objects in New York Harbor at night, being visible to persons on the river, and from a large part of New York City.

Indiana State Convention

The second annual meeting of the Indiana Electric Light Association was held in the Denison Hotel, Indianapolis, on August 17 and 18.

The following notable papers were presented;

"Relation of Central Stations to Supply Houses," by Gordon E. Varney, Indianapolis.

"Commercial Value of Low-Head Water Power," by F. A. Bryan, South Bend.

"The Cost of Light," by a representative of the engineering department of the National Electric Lamp Association.

"Ornamental Lighting," by E. Darrow, Indianapolis.

"Municipal Ownership in Indiana," by R. A. MacGregor, Connersville.

"Introducing Energy - Consuming Devices," by J. K. McDonough, General Electric Company.

"New Developments in Heating Devices," by W. F. Hadaway, Westinghouse Electric & Manufacturing Company.

"State Supervision of Public Utilities," by Thomas C. McRaynolds, Kokomo.

The officers elected for the ensuing year were: President, Mr. F. A. Bergan, South Bend; vice - president, Mr. S. B. Harting, Elwood ; secretary and treasurer, Mr. J. V. Zartman, Indianapolis; and chairman of executive committee, Mr. R. A. MacGregor, Connersville.

New Title for L. D. Gibbs

Announcement has been made that Mr. L. D. Gibbs has been promoted to the full title and responsibilities of Publicity Manager for the Boston Edison Company. Mr. Gibbs is an old newspaper man, and is particularly well equipped for the work in the right kind of practical experience.

Vehicle Engineering in St. Louis

Mr. C. E. Michel Talks of His Organization and What it Does

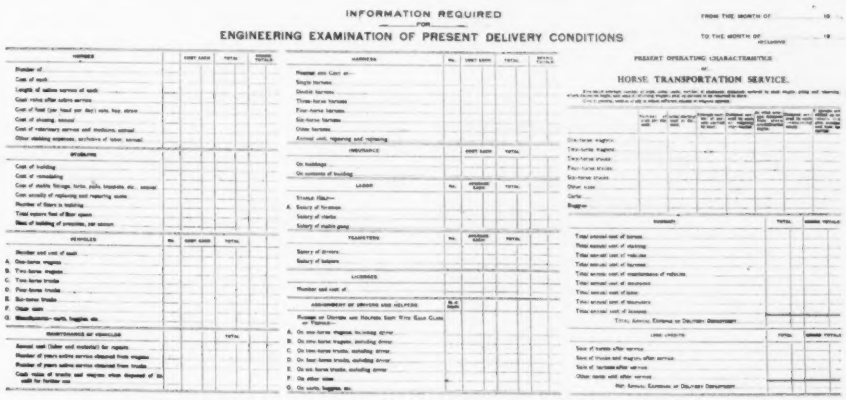
The Union Electric Light & Power Co. of St Louis was one of the first of the larger central stations to take up the development of an electric vehicle charging load. Their policy has been one of popular education. As Mr. C. E. Michel, the manager of their Automobile Department, expresses it: "The only way central stations can build up the electric automobile is to establish a competent electric auto department in the hands of men thoroughly acquainted with the work they are doing, and then show the public what the electric auto will do when properly applied and intelligently cared for."

An innovation in the service of this company is a system of information reports which are obtained from commercial vehicle prospects as a basis of an exact engineering report on the opportunities for the economical application of electric vehicles. This report, as shown in the reproduction, provides for complete data covering the number, condition and cost of providing and maintaining all the equipment incidental to the operation of horse drawn vehicles, listing such items as horses, stabling, vehicles, harness, insurance, labor, licenses, etc. Though it is exceedingly difficult to secure dependable data of this kind, an interested prospect can always approximate the major part and it provides the central station with an exact basis for working out the electric vehicle proposition.

In talking recently of the methods employed by his organization, Mr. Michel said:

"The success this department of our business has met with has not been due to advertising or special circulars but to direct and intelligent solicitation and to the fact that we have in operation in this city an exclusive electric garage, caring for any and all makes of electric machines and in which the system followed is second to none in the country. The men in this garage are thoroughly trained in their work, and are able to turn out repairs on electric machines at a reasonable cost, the repairs when finished being of the highest class.

"In order to accomplish this, we take advantage of our thoroughly equipped motor department for serious troubles in the wiring and motor of the car. If there is anything serious the matter with the mechanical or running portion of the car, advantage is taken of our large and competent mechanical repair shops, run in connection with the general power plant. In this way, we are not obliged to carry a heavy over-



INFORMATION REQUIRED

ENGINEERING EXAMINATION OF PRESENT DELIVERY CONDITIONS

PRESENT OPERATING CHARACTERISTICS OF HORSE TRANSPORTATION SERVICE.

head expense for skilled workmen. On the floor of the garage are three good mechanics of general electric automobile knowledge. These men can take care of any of the minor troubles, and take down and reassemble an electric car. And when the reassembling is finished, we know that the parts have been put back correctly, nuts have been tightened to their proper point, that cotter pins are in their place and bearing adjustments correctly made.

"When it comes to the point of straightening bent frames, rewinding motors, etc., the work is transferred to the departments named above. As agents for the manufacturers, we are in position to furnish material and do all necessary work as far as the batteries are concerned. In fact, we build a large number of batteries each year, not only for machines in our own garage but machines in a number of other garages in the city. We have been able to impress on the minds of electric auto salesmen and garage managers that we are absolutely impartial as to the care of an electric and as to the price for repairs and maintaining. We have been recognized by a number of them as authorities on the subject, as, for instance, the agents for the Baker, Brock, Woods, Columbus, Detroit, etc., etc., come to us for advice when anything goes wrong with their demonstrating cars, and we give them prompt and careful attention. This holds true not only of their demonstrating cars, but of any car they may happen to sell in the city. By pursuing this policy we have kept the good will of the different agents and have at the same time been able to educate the public to a standard of electric vehicle maintenance, the continuance of which absolutely guarantees the success of the electric auto in St. Louis. We are at this time working out a scheme for giving free inspection to any and all auto owners, telling them that if they are not satisfied with their cars, we will look them over and advise them what is wrong without charge.

"The manager of the automobile department has before him a list of the people who charge their machines by rectifiers. The amount of bill for this service is closely watched each month and if it runs beyond what is considered a reasonable and normal amount, investigation is immediately made to find out whether the batteries need washing or whether there is some other cause for the excessive amount of current used. In other words, we throw every safeguard possible around the electric machine, doing all in our power to see that the owner gets satisfaction out of his car.

"We are at the present time, erecting in the heart of the wholesale dry goods and shoe district of the city, a large and thoroughly up-to-date exclusive electric truck garage, which will eventually have a capacity of 150 cars and will be in the hands of expert batterymen and mechanics. We expect this garage to influence the sale of electric trucks, just as our pleasure garage has influenced the sale of the pleasure electric."

Renting Vacuum Cleaners Profitable in Helena, Mont.

Mr. W. R. Miles, the Commercial Agent of the Helena Light & Railway Co. of Helena, Mont., reports that the renting of vacuum cleaners has become very popular in that city.

"The scheme has been in operation for about six months," he says. "We had been selling vacuum cleaners prior to that date and advertising them somewhat in our regular space, but there were a number of people who were interested in cleaners, yet unable to buy one. When examining or inquiring prices, they were told that we would later have a machine to rent out, and we kept tab on these people and when we received the machine had a regular booking made. With but little advertising—little 'readers' in the newspapers—we have been able to keep the machine going nearly every day.

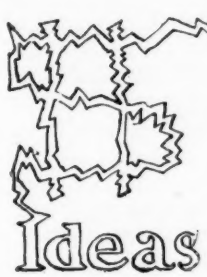
"Inasmuch as we have a man regularly for repair and trouble work, he

looks after moving the machine along with his regular duties. His time in connecting up and demonstrating is about ten or fifteen minutes as he explains the use of the different tools, how they should be held to do the best work, how to clear the dust chamber, etc. We have recently been renting a second machine with an attendant. This machine needs a little more care, but it does better work and we charge by the hour for the man and machine outfit.

"Sometimes our man is delayed somewhat by having to refuse the circuit, chiefly the old type of wiring where each lamp was fused with three-ampere fuse, but with a good length of cord it is not necessary to change connection for one floor of an average size house if a central outlet is selected. The current consumption being low—under five cents per hour—there is no difference made in the rate, the current being registered the same as for lighting purposes.

"Previous to this season there was a large gasoline driven vacuum cleaner in town for renting purposes. This spring it was working constantly, as were also three hand machines and two electric cleaners besides the two we are renting. This, of course, was the busy season, but with so many machines working, vacuum cleaning certainly secured a thorough advertising.

"Of course, the sailing has not been absolutely smooth, as fuses will blow and occasionally customers are not satisfied with the work of the machine. We feel, however, that this service has increased our sales for cleaners, on which there is a very good profit and it also adds somewhat to our day load."



MAKING THE CORNER GROCERY BOOST

O. B. YONTS

New Business Manager, Illinois Traction System, Champaign, Ill.

In our house wiring campaign, we have discovered a practical and efficient way of advertising the Mazda lamp. In every small residence district, one usually finds a grocery store where the neighborhood gossip is exchanged and where generally they are using kerosene or gasoline for lighting. We offer to install wiring, fixtures and everything ready to light on 30 days trial, and if he is satisfied with the light and cost of the operation at the end of that time, he is to pay us for the installation or exchange for his gasoline lighting plant. In this way we not only secure a new consumer, but make a booster in that neighborhood, and in some cases, with his assistance, we have wired as many as four houses in one block.

We are using one frosted bowl 60-watt Mazda lamp in each room, with the E-7 Holophane reflector, on brushed brass Mazdaliers of neat design, with either pendant or wall switches.

Borrowing Sales Brains

A Little Logic in its Favor Backed by a Few Figures

By W. E. Bayard

There isn't one man in seventeen who doesn't really believe that his own particular business is actually "different." And he says to himself, "Of course, everybody feels that way about his individual job, simply because he doesn't know what the other fellow's work is like. It is a prevailing superstition. With this game of mine, however——" Yet in spite of the well-nigh universal attitude, there has grown up within the last few years a new profession which is constantly giving the lie to this prejudice—a body of men who might be aptly termed "efficiency engineers," because they spend their time and earn their livings telling the other fellow how to run his business more efficiently.

It was a logical development and inevitable, because the demand for fresh brains is unending and insistent. Environment stamps its indelible impression on every man no matter what his character or previous training, and where men work together under similar conditions and directing their mental energies along similar lines there is a resultant inclination toward a similar mental attitude in so far as the common problem is concerned. It is a natural law, just as effective, though just as subject to exceptions, as that which governs the whitening of the ermine coat to meet the Arctic winter.

Therefore shrewd thinkers have begun to realize that there is value in the opinion of the well-balanced outsider, just because it is unbiased, and because a man untrammelled by any knowledge of the prejudices and precedents of the case is free to weigh the problem in his own cold reason and to sift it in the light of his knowledge of the basic principles of business.

And so came the "commercial engineer," the "efficiency engineer," the "system expert,"—not hollow titles by any means. True, no college degree being required by law, there have been many aspirants who only aspired; just as there are consulting engineers, with a full set of documents who can do little more than consult. But the men who really represent the movement have not failed to justify their titles.

One of the first enterprises of this kind was an organization of consulting and investigating system experts. A man would write in that he was about to begin the publication of a farm journal—how should he handle his mailing lists and how should he go about the up-building of his circulation? A study would be made of the methods of similar publications and other office systems where the problem was akin and the report placed in the inquirer's hands, the concrete findings of many years of gradual construction and elimination.

There are other men who are retained by large manufacturers to examine into their shop methods, analyze their mechanical processes and study their labor problems. They search out all lost motion, all duplication of energy, and devise new short cuts to save time and material. Very often the commission is assumed on the basis of a participation in the economies effected and the expert accepts a percentage of the actual saving he is able to achieve, which is proof enough that directly traceable benefits are obtained. For again the expert brings to the problem a familiarity with the methods of other plants where there are similar processes, the various items are mentally compared and the result is a practical

selection from the best product of the evolution of efficiencies, worked out by slow development in a dozen different places.

It was only natural, also, that there should be other men specializing in the organization and maintenance of sales departments and that they should have looked upon the central station industry as a fertile field. As would be expected, there have been failures here, even as there have been successes, but the extent of these successes has been little appreciated beyond the scene of the work itself.

The field is ever fertile, as we know, but it has been in dire need of scientific cultivation, for before the commercial awakening of a few years ago, environment had played its part with a heavy hand and the central station "solicitor" shaped his mental attitude to that of his boss, the engineer, to the distress of the public and the discouragement of his own future. But since he has come to consider himself a merchant and a manufacturer, as well as an electrical engineer, the central station man has been brought face to face with his ultimate problem and has begun to look about.

The writer has delved into the results obtained by a number of electric light and power companies who during the last year or so retained system and sales experts to investigate their commercial departments. Some of the figures are interesting and significant. In one city of over 200,000 population in the middle west, a general advertising and sales campaign was instituted in this way, and the records show that at the end of the first 102 working days 321 contracts had been brought in and credited to the new measures. Of these, 289 were for five-year periods, 13 were for 3-year periods, 5 were for 2-year periods and 14 for one year. Also 247 were absolutely new, requiring original pole connections, and the balance came from customers who were using current without contract or were occasioned by increase in connected load. They displaced 234 gas arcs and 280 individual gas burners with a net increase in connected load of 5210 16-cp. equivalents, which meant added annual revenue close onto $15,600. In another western town at the end of a year's activity under the direction of an outside specialist the figures were: Gas arcs displaced, 292; gas burners displaced, 101; increase in 16-cp. equivalents, 1500; estimated increase in annual revenue, $5,600.

Again, another six months' test reported 1980 gas mantles replaced and 989 16-cp. carbon lamps supplanted by tungsten installations. Other central stations have had similar experience and commended the practicability of this introduction of outside commercialism.

After all, the problem confronting the lighting company is close akin to that of all other sellers of merchandise, for be the commodity what it may, the market must be found, developed and maintained by the same general methods.

There is a lesson in this movement which applies not only to every central station company in the land but to every central station commercial man as an individual. You may say that "nobody can tell me how to run my business," but in your heart you know that the unprejudiced, keen-eyed, experienced outsider, with his knowledge of general conditions and a wide perspective—you know that he can tell you a whole lot not only about your own business but about the business of other men in and out of your line, which will be of value.

And no man need fear that to utilize outside brains will reflect on his personal ability. There is no prejudice against the consulting engineering specialists. Why should there be against the commercial specialist?

Experience with Tungsten Lamps for Street Lighting

By Claude C. Smith, Manager Bradford and Gettysburg Electric Light and Power Co., Bradford, Ohio.

Abstract of paper read before the Convention of the Ohio Electric Association, Cedar Point, O., July 26-28, 1910.

The selection of a type of electric lamp for street lighting in small towns and suburban districts is dependent principally upon the amount of finances available for such purposes. As the area to be covered by the lighting system is much larger in proportion to the assessed valuation of the real property than in the business districts and large cities this condition necessitates the adoption of some method of lighting which permits a moderate illumination over a large area at a reasonable cost.

The commercial perfection of the series tungsten street lamp produced a lighting unit which possessed the desired points of economy of operation with a generous illuminating value. At the time this company installed its first system of purely series tungsten street lamps (November, 1908) very little information was available as to the best practical method of installation and the probable cost of maintenance. Our experience has been that each installation brings forth new problems to be solved and the local conditions have much to do with the type and method of installing apparatus. The condition of the streets in regard to shade trees, local prejudices as to the location of poles and lamps, source and method of power distribution, number of lamps to be installed and the method of installing the lamps, give a wide field for variations.

The 75-watt 60-cp. series lamp was the largest size commercially available when our first installation was made and has been retained as a standard for the last three systems installed. The specifications of the local committee on street lighting called for not less than 16-foot mast arms, lamps to be 16 1-2 feet above road ways. These mast arms were built by the local linemen and were of 1 1-4 inch iron pipe trussed with the 3-8 inch iron rods, which were spread about 18 inches apart near the center of the area by a V-shaped spreader iron 1 1-4 inches x 5-16 inches. These arms cost complete installed on poles about $4.00 each, four men with a horse and wagon hanging on an average of 20 arms per day. On the last installations the 3-8 truss was displaced with No. 4 steel messenger cable which makes the work of erecting and adjusting the arms much easier. These mast arms have given but little trouble, only one failure being noted, which was due to the heel bolts pulling out of the pole, the truss rods prevented the arm from coming in contact with the ground and was in no way damaged, the lamp filament remaining intact.

Two instances were noted where the slip socket was blown from the hood by violent wind storms, the actual number of lamp filaments broken by storms being three for the year. Four lamps were broken by stones and other missiles, 57 lamps were lost by burnouts and 35 lamps proved defective after a few hours burning, due to the failure of the cement joint between the filament and the leading in wires. This defect was notable only on the first consignment of lamps and they were replaced gratis by the manufacturer. While we have tried different makes of lamps our experience has been that they all have weak features, such as poor joints, early blackening, and short life. At present, however, we find these faults are almost eliminated.

Six series sockets have been destroyed by excessive arcing across film cut-outs. On the Gettysburg installation of twenty lamps gauze film cut-outs were first installed but gave some trouble by jumping over and were too sensitive. We replaced them with mica strips and have but little trouble with as low as 220 volts which punctures them easily. This 20 lamp installation is fed from the 220 volt mains through a 3 k. v. a.,

variable tap transformer and a series regulator, the 60-light plant has an 11 1-2 k. v. a., variable tap transformer and a series regulator. The variable tap transformers are arranged for a maximum voltage of 3 k. v. a. 600 volts 11 1-2 k. v. a., 2250 volts with taps of 12 1-2 per cent, 25 per cent, 37 1-2 per cent, 50 per cent, 62 1-2 per cent, 75 per cent, 87 1-2 and 100 per cent. The series regulators have given excellent service, which is corroborated by the small number of lamp renewals.

With regulators of this type no short circuiting device is required for starting, the 220-volt primary on our installations being opened and closed by eight-day time-switches. These switches gave some trouble during the extremely cold weather of last winter and frequently stopped about the hour when the arc circuits were due to be cut out in the mornings. This trouble was eliminated by installing small heating elements (about 15-w. current consumption) inside the clock cases. We also have had some trouble in regulating the clock mechanism due to the magnetic fields of the regulators and transformers.

The life of the 75-w. 60-cp. series tungsten street lamps has been very good, in fact much better than we had ever expected. The average life of lamps for the Bradford installation of 60 lamps from February 1, 1909, to February 1, 1910, being 2,311 hours. The maximum life of the oldest lamps up to date (June 25) is 5,280 hours, and still going.

We have 4 lamps of this life which were of the original installation.

Number of lamps installed	60
Broken by storms and wind	3
Broken by storms	4
Defective	45
Burned out	57
Total number installed	169
Lamps in service	60
Number of renewals	109
Number of lamp-hours burned	252,000
Average hours life	2,311
Total hours burning	4,200
Kwh. consumption	19,214

Watt consumption per lamp hour 76 w.

A few of the reasons for the efficiency of this plant are, first, the careful method of laying out the wiring, its installation, the absence of all grounds and crosses, the elimination of all end turns on insulators and knobs and the operation of the lamps at a slightly lower amperage than the rating.

We have not experienced any lightning disturbances during the past year as all our primary, secondary and arc circuits are protected by electrolite arresters designed and installed by the management. As to the illuminating value, the local residents are well pleased with this method of street lighting as every square in the town has a street lamp and all feel that they are getting something for their money. The lamps are spaced about 400 feet apart, which enables pedestrians to plainly see from light to light.

Colorado Electric Show

The Colorado Electric Club, whose membership is made up of representatives of all the electrical interests of Colorado and adjacent territory, will give an electric show at the Auditorium, Denver, from October 8th to 15th.

The Illumination committee has planned spectacular lighting for the show that they say will rival some of the marvelous illumination achievements of the Hudson-Fulton celebration in New York last fall.

Interesting Vehicle Data.

A small booklet entitled, "How to Get That Undeveloped Central Station Business," has been issued by the Electric Storage Battery Company, containing a quantity of data that is worth the attention of every central station sales manager. In addition to a very lucid talk on the vehicle opportunity, an interesting letter from Mr. W. H. Blood, Jr., of Stone and Webster, is quoted in full. This is more than an ad.

SELLING ELECTRICITY

SEPTEMBER, 1910

BACK ON THE JOB

September is the month of joy for the nerve specialist. Those of us who have survived the nerve-racking ordeal of the summer resort—who have escaped drownings, sunstroke and matrimony return to their jobs after Labor Day full of vitality and impatient to "plunge in" to the fall work. And in "plunging," we undo in a few days all the good our vacations may have done. In a month we are just where we were before—harried to a frazzle and unfit for constructive brain effort.

This "plunging in" habit needs discouraging. It's an American trait, bred pretty deep in the bone, and will stand a lot of abuse before it is overcome, but perhaps a little hint will help.

No energy is so valuable as human energy; none is so easily, so casually, wasted. And the reason, nine times in ten, is because men will persist in needlessly overloading the human machine; in clogging the gears and bearings with the rubbish of petty detail, in allowing purposeless friction to dissipate what should be productive effort.

Don't "plunge in." Conservation is a word that will bear analysis by the man who returns fresh from vacations and wants to make a record.

COMMERCIAL SECTION, N. E. L. A.

The first steps looking toward the practical organization of a Commercial Section of the National Electric Light Association have finally been taken. A preliminary draft of what may be called the Section's constitution and by-laws has been unofficially approved by some of the Association officers, and the matter is now in the hands of the committee appointed at the St. Louis convention. It is expected that prompt action will follow and that the organization will be perfected at a meeting of the committee which will be held within thirty days. Thereafter we may count upon prompt and aggressive action, as the members of the committee all have reputations for getting results.

Two features of the organization plan, as outlined in the preliminary draft, are of particular interest. In the first place, membership in the Commercial Section will be restricted to those holding *personal* membership in the Association. Thus, no companies will, as companies, have a voice in the Section's work: it will be a Section of individuals, each man standing upon his own feet and being judged solely upon his personality and ability. Further, membership in the Commercial Section is not restricted to officers and employees of central stations, but may include men connected with manufacturing concerns or other associate member companies, and these members (Class E) may serve on committees, and participate in all the activities of the Section. Of course their status in the Association remains unchanged. By this scheme of membership those who have planned the preliminary organization of the Section hope to engage the in-

terest and services both of men employed in the smaller central stations and of men associated with manufactures, whose special knowledge and ability will enable them to take a prominent part in the Section's work.

The second feature of interest is the formation of numerous committees, each assigned to the study of a particular subject. Thus, there will probably be a Committee on Power which will investigate and gather data on motor installations of all kinds, this data to be accessible to every member of the Section and the Association. Similarly there may be Committees on Heating Appliances, Signs, Residence Lighting or other subjects, each committee being composed of men who have special knowledge of the subject assigned and successful commercial experience in developing that particular class of business.

A development of the committee idea that has been suggested is that each paper on the commercial program of the next convention be assigned to the committee having that subject in hand. If this plan is carried out, the various papers will without doubt, have greater value, as each will contain the year's accumulation of data and will represent the boiled-down experience, not of a single company or individual, but of the entire industry.

The organization plan, as it appears in the rough draft, is certainly promising. The particular feature that will appeal to our readers is the opportunity offered for individual service. It is needless to deny that a number of the men connected with the smaller central stations have felt that the National Electric Light Association is too large for them ever to make much headway in it, that the authority is concentrated in a few hands and no opportunity offered for "the little fellow." While this criticism is unfounded—for it has been the "little fellow's" diffidence and not the "big fellow's" assumption that has centered the Association work—nevertheless the new Section will do much to create absolute equality. It puts a premium on individual effort, offers opportunities for individual accomplishment, serves as a training ground for bigger and more important Association work.

The committee in charge of the organization of the Commercial Section feels that it should have the benefit of every central station commercial man's ideas in completing the preliminary work, and so invites suggestions on all points which may affect the success of the new Section.

Such suggestion may be addressed to either of the following temporary officers of the committee:

Mr. George Williams, Chairman,
60 Wall St., New York, N. Y.
Mr. Frank B. Rae, Jr., Secy.,
74 Cortlandt St., New York, N. Y.

TOO MUCH SELLING

A bright chap in charge of a central station commercial department was fired the other day for doubling the plant's connected load. He told us pridefully that the company was compelled to buy a new 2500-kw. machine to take care of the excess, and that the board of directors couldn't stand the prosperity. Wherefore, in the words of the vaudeville song, "a neat little tin can was tied onto him." The case is not unique. About every so often one hears of something similar; and always the victim of the tight-fisted directors is a bright chap whose ability to sell is unquestioned.

Now, there's a difference between selling and salesmanship. Selling means getting an order; salesmanship means getting a *profitable customer.* Selling, in the last analysis, is but a species of bunco game; salesmanship is the highest type of diplomatic representation. In the commercial departments of central stations there is apt to be either too much selling or two little salesmanship. And of these evils, the greater is too much selling.

THE PAVING OF HELL

Nobody questions the moss grown statement that "Hell is paved with good intentions," mainly we presume because it would seem a very satisfactory material for the purpose and amply plentiful withal. It seems improbable, however, that in so extensive and densely populated a resort any one system of paving should obtain exclusively, or that but one single substance should be used in its composition.

It is a subject to which we above have given scant consideration, but a little research develops conclusive evidence that even in this art there has been a march of progress, the refining influence of evolution. In short, we find that in many of the "New Additions," sections recently opened up for occupancy, the pavements are constructed almost entirely of the promises of central station salesmen—unfulfilled because ill considered. And the reason seems to be this:

"Good intentions" are bad enough in their way, but they wreak their vengeance and destruction on the character only of the moral weakling who gives them birth. Aside from the problematical loss of "might have beens" the evil goes no further. But when a man makes you a promise through a desire to please you, to land your order or to win your approval and confidence, and to the end that you depend on him and those he represents for an essential service—then if he fails, the evil strikes not him alone but you, and the reputation of those others whom he has misrepresented.

To climb down to the level of the day's work. Suppose a man says, "You can have the order if the motors will be in by Friday morning," and you agree. Now, if you know that because of the line extension and the pole to be set, it is doubtful if the construction department can make good by two days or three, but still take the order for fear of losing it, what does it mean? The customer will go ahead and make his plans trusting you and the reputation of your company. He will be disappointed, inconvenienced and perhaps lose money if those plans miscarry and the initial step in the transaction plants a prejudice. Your company is censured and smarts under the rebuke because through misrepresentation it was unmerited. And you, the misguided offender, are discredited in the eyes of your customer, your boss, and yourself.

Such calamities are the product either of ignorance or inertia; either the offender is not qualified by experience to represent his company or he lacks the moral fortitude to oppose an unreasonable prospect for fear of losing an order. His point of view is distorted in either case, for the mission of every central station salesman is to sell satisfying service, not to take orders and put the rest up to the company.

The promising of impossible connections is the stumbling block over which many a man's successful future is spilled.

The Story of a Flatiron Campaign in Reading, Pa.

By Chas. J. Esterly, Commercial Dept. Metropolitan Electric Co., Reading, Pa.

I'm going to tell you how we did a little incidental flattening of the curve! How we did it using our own medicine —did it Electrically. Here's the secret —to you: Sell Electric Irons—to the consumers: Use Electric Irons.

There's a great deal in doing a thing at the proper time—the right time. Even so with an electric flatiron campaign. There is that time of the year when electric irons sell by reason of natural circumstances, even though you may be unable to unload at Christmas by virtue of the "time." Accordingly, we selected the first of May as a logical season.

Chas. J. Esterly

The first of May is the period of the year when the people are turning their thoughts to summer and recalling a few memories of the previous summer. They are just trying to think how warm it was last year and wondering how it will be this summer, and a warm day dropped in here and there prematurely, just as a sample, tends to make them all the more appreciative Now you who know, will not deny that many is the time that you have thrown just a little of this warm argument into the sale—and closed it out. I believe the first electric iron was sold wholly on this basis. Thus we selected the first of May.

I will briefly outline the scheme upon which we conducted our proposition.

First—We mailed a circular letter with leaflet and fifteen-day order form. An electric sign on the outside of our building said, "Use Electric Irons." The backs of our bills told of electric irons. The street car ads sang of electric irons, Everyone of the organization talked electric irons.

Second—We sent solicitor with team to place the irons.

Third—Our lady demonstrator covered the "trials" at the end of fifteen days.

Fourth—The removal of the irons—"comebacks"—was in charge of a solicitor who had previously been over the ground with the solicitor who placed the iron.

In explanation—The circular was brief and to the point, on a hand-made Japanese paper and addressed to the Mistress. We said that "A family is known by the Flatiron it keeps—let us make you a known quantity by selling you an Electric Iron!" and we ended by noting that delays were dangerous. The leaflet was on hand-made Chinese paper with a Chinaman as a subject. A pun to the effect "Electric Flatirons save soles. Note the Celestial smile!" gave the necessary touch. The choice of paper and write-up was in our peculiar, persuasive style and we were assured of "attention," and attention, you know, is rated by the advertising experts as at least 50% of the sale. Not only did it attract very favorable attention and comment, but it added to the general reputation of the company. We considered it good, cheap advertising and the hand-made papers cost only a trifle more than ordinary flattened pulp.

With a day elapsed after the mailing of the circular matter, we sent our solicitor. It is curious to note how

the certain few will go in on a good thing. I refer to the people who called at the Show Room the next morning after mailing and secured an iron on trial and carried it home with them.

We had one of our inspector's wagons pressed into service, duly placarded. Much has been said of the flatiron campaign wagon with its signs telling of the Flatiron Millennium. It has been pictured oft.

The Reading Flatiron Wagon

Let me say that all the purpose the wagon serves is to cover the ground in short order. It may serve as a means of added enthusiasm to the occupants. But as an advertising factor it is nil. The wagon is merely a passing event to the general public. It is merely an economic factor of a campaign.

You must understand that I do not hesitate to give the proper credit. Its all right in its way—but it has been figured too highly, Electric flatirons at the present time are not universal household appliances. The general public is not more than superficially interested—you have not made them directly interested as yet. Flatiron campaigns deal with a mapped out territory. There is no promiscuous distribution. Therefore, I say, general advertising does not pay. The same is true of the rest of the advertising that we used other than that which went direct to the consumer. We will not deny the value of cumulative advertising—the keeping of one's name before the public all the time, but the electric business is not a "Bee Soap" proposition.

Let me note that in canvassing the wealthy section, the advertisements on the wagon were the means of the servants "getting wise." A servant is a servant. They need to be educated. The servant seeing the wagon with the "glad irons" tells our solicitor the mistress is out (?) or not able to be about (?). It's all the same. You simply can't get in touch with the lady of the house, and she is the one you must see. Otherwise you are at once placed in a class of genera' peddlers and agents, and servants will not take any chances—sometimes. But there's a remedy for every ill. Munyon says so! We took down our signs, and at the next house we landed an iron.

Five Hundred modern housewives of Reading use Electric Flatirons. Why not you?

Electricity is Cheap — Clean — Convenient.

Turn the Switch! That's the Electric way!

METROPOLITAN ELECTRIC COMPANY

MECO BUILDING READING, PENNA.

One of the Street Car Cards

In passing let me relate a little incident which occurred. I think it a good one, and also a good one to avoid.

The solicitor has just said: "Good morning."

The lady had answered: "How do you do?"

The solicitor: "We are following up the letters we mailed you the other day, telling about the electric flatirons, and—"

The lady in haste: "So you're going after the letters, are you? Wait I'll get the one you mailed us."

Of course, a hasty explanation—a laugh—a flatiron on trial—fifteen days later a sale.

In closing out the irons after the period of trial has elapsed, we used a woman demonstrator of middle age and good address. We reasoned if any unexplained difficulties had arisen, it would be better to have them explained away by one of the same sex, giving added confidence We found this to hold. All "comebacks" we called for in the person of a solicitor who had accompanied the one who placed the irons. A further talk was given and in a number of cases we were able to stay the irons. Then again, there was just that much more personal contact.

At the present time we are gleaning the results of this campaign, and every now and then from consumers who at first would have absolutely nothing to do with the matter. Our percentage of irons returned was 18%, and in the field canvassed among actual residential customers 60%, were placed. The people of this community are noted for their conservatism. They decline to go in to anything with break neck speed. If it were not for the fact that the floating population "from Missouri" were not already so very large, I might hazard that they originally came from that section.

In summary, let me say that a well conducted flatiron campaign is a liberal education to the consumer. It brings the question of electricity before notice in a thoroughly practical fashion. It paves the way for additional electrical devices. It is, in fact, the company placing itself in individual contact with the consumer. It is a broadening influence and the seeds continue to grow. In general business a sale consummated means a first and only profit to the merchant. With an electrical device it means continued revenue to the company. The consumer has a labor saving, convenient device with practical operating costs—and the company a revenue producer of gilt-edge character.

A Family is Known by the Flatiron it Keeps

ONCE upon a time a certain husband strove to avoid forceful things. So he went, he sought, he found, he bought an Electric Flatiron.

¶ Now, when new thought is rampant, he observes a radius of eight feet. He is at his ease—he feels safe. His wife finds ironing a pleasure—and is less apt to illustrate remarks.

¶ We have Electric Irons which we are selling at Four Dollars—including stand and eight foot cord.

¶ A cent's worth of Electricity will operate a Flatiron fifteen minutes.

Our booklet "Ironing by Electricity" may be had for the asking

Metropolitan Electric Company, Reading, Penn'a

Another Street Car Card

A Narragansett Smoker

The following letter from E. R. Davenport, Sales Agent Narragansett Electric Lighting Co., Providence, R.I.,

to all the men of his department, is an interesting side-light on the methods of this progressive organization:—

"On Wednesday evening, Mr. A. L. Eustice, of the Westinghouse Nernst Lamp Company, will deliver a talk on the Westinghouse Nernst Lamp in its commercial applications. This will be illustrated with lantern slides.

"It is probably unnecessary for me to ask you to notify all of your prospects which you think would be interested in this subject; also any of your friends, especially the electrical trade, or anyone interested in the subject.

"The above will be in lieu of a monthly smoker, with light refreshments, etc. Make your invitations personal. Notify Jones, Smith and Brown, and follow it up. Call them on the telephone shortly before the appointed time for the talk and remind them.

"*Remember, all together all the time for everything electrical.*"

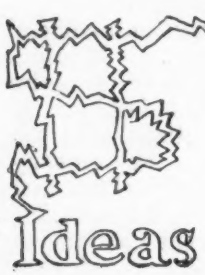
Electric Pumping in England

It is reported that in the two townships of Richmond-on-Thames and Watford, both located near London, England, it has been decided to install electrically driven pumps to supply the municipal water works. The current will be purchased from the municipal plants, the rates being 3 1-2c. per kwh. in Richmond with an annual minimum guarantee of $500, and in Watford 3c. per kwh. up to 60,000 kwh. and 2c. from there on, with an annual minimum payment of $2250.

The Fire Hazard

Here is a point that a good many people overlook when considering the comparative virtues of gasoline and electric vehicles—the fire hazard. It works two ways, in your own garage and for the truck, in the matter of entering the premises of customers.

In your own garage there is no gasoline tank and the insurance rate you have to pay is correspondingly lower. And the electric truck or delivery wagon is able to back right into sheds and buildings strewn with excelsior and other combustible packing materials without the slightest element of risk. The insurance underwriters absolutely prohibit the entry of gasoline cars under such conditions.



Getting Prospects by Puzzles

A. O. TAYLOR
Butte Electric & Power Co.,
Butte, Montana

The prize puzzle is an old story and most men are inclined to view it with scorn when suggested as a central station advertising scheme, but we have given it a new turn which has brought interesting results.

We publish and deliver to every residence in Butte, a monthly bulletin called "Light," on the back page of which we print a simple puzzle, offering as prizes for the first three correct solutions some sort of electric appliances.

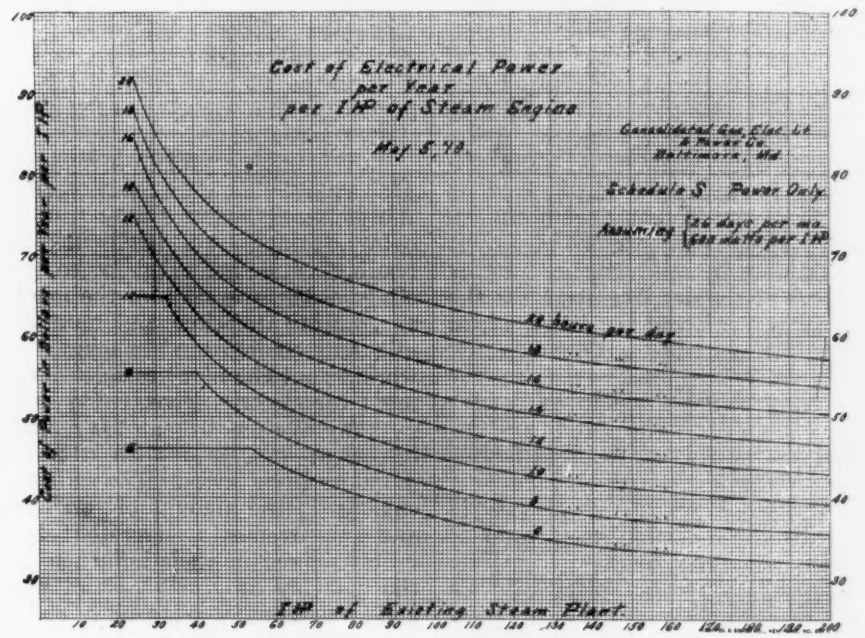
Just below this puzzle, we leave a blank line and ask the people what they wish us to offer as the prizes for the ensuing month. A surprising number of replies are received and each month we choose two or three of the devices which are in greatest demand. In this way, we secure a large number of prospects who have actually written us that they are interested in some particular appliance.

The Cost of Power Per Horsepower Per Year

By Douglass Burnett, Manager Commercial Dept. Consolidated Gas, Electric Light and Power Co., Baltimore, Md.

In the Dollar Idea printed on page 96 of the March, 1910, issue of *Selling Electricity*, the correspondent gives a discussion of the question put by a power prospect: "How Much Will Electric Power Cost Per Horsepower Per Year?" He supposes that the prospect can tell how large a motor he will need and purposes answering the question with a figure giving the cost per horsepower of connected motor capacity. How much better it would be to determine the probable annual cost with electric power and to give the prospect a direct answer based upon the indicated horsepower that the prospect actually uses.

The prospect wants information as to his specific case and not data on other cases. Figures given according to the motor capacity by the correspondent will not apply to the specific case, and furthermore are likely to vary widely owing to differences in lines of manufacture, differences in rates obtained according to load conditions, and differences in methods of machinery drive. By giving a figure of cost per indicated horsepower as suggested, the solicitor is put in position to estimate the annual cost of electric power and to give to the


Cost of Electrical Power per Year per I.H.P. of Steam Engine
May 8, '12.
Consolidated Gas, Elec. Lt. & Power Co. Baltimore, Md.
Schedule S Power Only.
Assuming 26 days per mo. 600 watts per I.H.P.
I.H.P. of Existing Steam Plant

Curve Used in Baltimore in Demonstrating the Economy of Electric Drive

load. He purposes also to give a chart of the variations of the prospect's load and then attempting to explain the means of reducing the friction load, indicate to the prospect what is meant by the term "load factor."

The writer thinks that the correspondent has not worked out the answer to a proper conclusion and thinks that he is wrong in figuring the cost of electric power per horsepower of

central station the benefit of the saving in shafting losses and at the same time to give the prospect a figure for electric power which he can compare with his figure for steam power. The practical difficulty with the suggestions, included in the Dollar Idea, is that they do not answer the question.

Any steam power user who takes pains to determine his power costs is likely to figure out that his power costs so much per horsepower per year, and on asking for the cost of electric power expects a figure per horsepower per year instead of what he usually receives—an outline of meter rates from the central station solicitor. In carrying out this new suggestion we should make the closest possible estimate of the shafting losses which would be saved by a suitable installation of electric motors, figure the necessary deduction from the amount of indicated horsepower as obtained from steam engine indications, make an estimate of the current consumption by applying the number of hours of factory operation for the period in question to the average load determined as above, thus arriving at the electric horsepower hours per year, convert the result into kilowatt hours, determine the total cost of electric power per year from the figures of demand and current consumption and then divide the cost of electric power by the indicated horsepower of the engine. The answer will thus state plainly the cost of electric power per indicated horsepower per year. In this work a short cut would be to estimate the percentage of power wasted in shafting, the solicitor using his trained judgment, and to apply this percentage to the indicated horsepower of the engine. This method will apply equally well to the party who is renting power from shafting in a steam operated power building, or to the case of the intelligent factory manager using steam power and accustomed to estimating costs on the basis of unit production.

The latter is likely to keep a separate plant account and to know the monthly costs and their relations to output of manufactured products. He is likely to indicate his engine on several days from 9:00 a. m. to 10:00 a. m. and 3:00 p. m. to 4:00 p. m., for instance, during the days the plant is in operation. His total power cost per year divided by the average, or in some cases by the maximum indicated horsepower, gives him the cost per horsepower per year. He will expect the answer to his question as to the cost of electric power per horsepower per year to be based on the conditions existing at his own factory and will not be satisfied with information as to what others are doing. He will want to know whether or not you can show him a saving by the use of electric power and will want your answer in the same terms for electric power as for steam.

In this case, complete investigation of the plant should be made, verifying the engine indications with test indicators, taking "no load" frictional readings and including a complete study of the operation of the machinery, noting the time and number of idle and underloaded machines and working out the best possible arrangement for electric drive, going so far, in many cases as to plan for replacing inefficient machines with others of more modern type. The effect of changes in the amount of production and improvements suggested should be considered in their influence upon the monthly or yearly cost of power and in some cases it is well to call the customers' attention to the increased amount of production that may be obtained by the use of electric power and the increased value of goods that can be manufactured with a certain specified increase in the power bill.

In this work, a set of curves showing the relation between indicated horsepower of steam engine and cost of electric power in dollars per indicated horsepower of steam plant, and the number of watts per indicated horsepower, depending on the percentage of power that can be saved

by using electric motors, will be found useful. One of these curves is shown herewith.

Another class of power prospects for the central station is the plant owner who keeps no record of plant costs and who does not, therefore, know how much power his establishment demands, nor the relation of his power cost to the output of goods handled or to the profits on his manufactured commodities. He assumes that because the engine when purchased was guaranteed at 50-horsepower, therefore he has used 50-horsepower since it was installed, and could not possibly get along with less.

Still another is the plant owner who keeps his coal bill receipts and knows merely the cost of labor for fireman and engineer services and who may have had his engine indicated at one time because it was not running at full speed and he desired to find out if it was overloaded. He summarizes the coal and labor bill by the year and divides this by the information obtained on such tests, and believes that he is sufficiently armed to meet the central station rates on the basis of cost per horsepower per year. In either case it is not necessary to refer to the cost per horsepower per year or the cost per kilowatt hour, but it is sufficient to indicate any saving in dollars per month or per year, by the use of electric power, and to explain the advantages derived from the use of electric power and central station service.

Sign Sales in Meridian

The Meridian Light & Railway Company, of Meridian, Miss., which has been recently taken over by Henry L. Doherty & Company, has been doing some very interesting work in promoting the popularity of electric advertising. Mr. C. E. Varney, the Commercial Manager, in talking of the progress that has been made, says:

"Since the first of June we have closed up sign contracts aggregating fifteen hundred four-candle-power lamps. One of the nice features of this business is the fact that we have been able to interest one of our banks in a large roof sign which will be lighted for the first time to-night; one of our prominent real estate men in a good roof sign with a slogan phrase; one of our newspapers in a very unique flashing effect in a roof sign, a furniture store and a drug store, both of whom have bought flasher effects, and a cafe and a piano store who have straight burning signs.

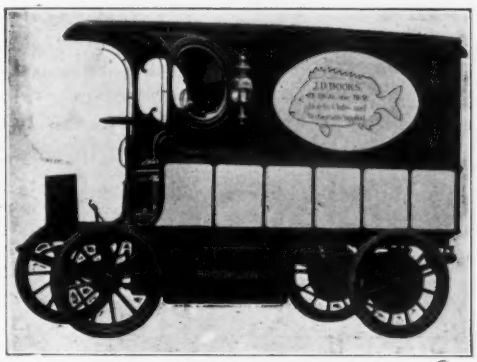
"We have had the department in operation for three months, and have closed, in that time, business aggregating $3500 a year in revenue.

"As you see, we have been able to interest concerns in several different lines of business, the first two, the banking and real estate concerns, being the ones usually the most difficult to interest in this form of publicity."

Electric Fish Delivery

J. D. Books, a fish dealer in Brooklyn, is using the electric delivery wagon shown in the illustration. He says:

"Before installing my electric car last March, I was running three horses



and wagons and three drivers. I am doing 10 per cent more business this year than last, and am using only the one car and one horse and wagon with one chauffeur and one driver, and can accomplish all the extra deliveries in three hours less time per day than with the old method."

And what do you suppose it is worth Mr. Books in advertising to deliver his fish in this vehicle?

Vehicle Advertising in New York

The New York Edison Company has been sending out a very interesting series of circular letters, directed to the various classes of prospects for electric vehicles. This is one of the

characteristic cuts used on the letterheads. A very forcible comparison between the horse-drawn and the electrically propelled vehicles appears in one of these letters as follows:

Speed: Horses can do but five or six miles an hour under normal conditions, while the electric wagon can do ten, and you don't have to stop to feed or water.

Capacity: With an equal carrying capacity, and the higher speed you can handle fifty per cent more goods with electrics.

Space: About half of that required for an equal number of horses and wagons. Where real estate is costly this is vitally important.

Cleanliness: An electric garage can easily be kept as clean as your own home. It is a much harder proposition with a stable.

Availability: Because of the smaller space required and the absence of stable odors, it is possible to keep electrics in, or adjacent to, the store.

Elasticity: When trade is dull electrics stand idle without any expense whatever. Horses eat whether working or loafing.

Reliability: In winter and summer horses need extra attention. The weather does not interfere with electrics, and they are safer than horses. They start and stop instantly, and do not scare or run away. All features which make horse-drawn vehicles so undesirable are eliminated.

Economy: Elimination of wasteful methods is the chief problem in modern business. There may be a few isolated cases where there is no economical advantage in motor vehicle delivery, but these cases are exceptional instances. The operator of a few delivery wagons, a couple of trucks and two or three heavy drays, can profit at once by replacing them with electrics, for his expense will be much less for a given service. Where a large number of vehicles is used, the advantages of electricity become more apparent, and the efficiency of the service is improved still more.

Ideas

FEATURING THE PENNY'S POWER

GEORGE R. JONES
Purchasing Agent North Shore Electric Co., Chicago, Ill.

No doubt every central station has from time to time advertised what can be accomplished by one cent's worth of its current. We have decided to go farther than this and to place in our display rooms a statement detailing this information, very attractively drawn up and suitably framed. This is especially intended to call attention to the large amount of productive work that is done by the various appliances on sale there. Customers are always favorably impressed by the figures and thus the way is often paved for a sale.

British Shop Lighting*

The Attitude of the English Central Station Towards Commercial Lighting—From an Englishman's Point of View

By James A. Seager, A. M. I. C. E., Newcastle-on-Tyne, England

Electrical engineering in Great Britain has suffered to a very large extent from the commercial point of view because it has been so long regarded as a profession and not a business. In one respect this has had an advantageous effect, not only upon Great Britain alone, but upon other nations, inasmuch as the genius of the British engineer has been in the main directed to the production of engineering devices and the protection of engineering equipments. It has remained for the American engineer, however, to show how an electricity supply authority, once in possession of an economical generating and distributing plant and a fair range of current consuming devices, can best apply its strength to pushing these devices on a commercial basis in order to develop its lighting and power load as far as possible.

Work in this direction has been very much hampered by the unfortunate rivalry which exists between the central station engineer, the electrical contractor and the manufacturer of electrical supplies. Up to the present it has been found impossible to coordinate the interests of these classes. Even at the present time in Great Britain, it will be found that electrical contractors are up in arms against the supply authorities who are attempting to do free wiring, and to take other progressive measures, towards the sale of electricity; the manufacturer is cutting the electrical contractor out of his legitimate field by establishing sales depots direct to the customer, and even doing the necessary wiring; while the electricity supply authority, in attempting to push the best manufactures by means of show rooms and the advice of skilled engineers on its staff, is in some cases creating among the manufacturers animosity to any operations beyond the automatic sale of electricity.

Under these circumstances the work of propaganda among the general public is rendered very difficult, although at the present time such movements as the combination of the electricity supplies of London for purposes of publicity appears to be in the right direction. Such movements are extending to a considerable number of provincial centres, but are by no means of an unanimous nature, and it is therefore early to predict that anything like a completely organized and well-balanced publicity system for the electrical industry will be formed.

It must not be argued, however, that Great Britain is entirely in the dark ages with respect to the commercial organization of its electrical sales industry so far as the central station is concerned; and in order to indicate as clearly as possible the general tendency at the present time, it may be worth while taking up the attitude of two or three typical supplies upon one specific object, the means and measures necessary to push the sale of electricity for lighting of shops and business premises. This is realized to be a most important sphere inasmuch as there are in most of the large cities a considerable number of premises which, owing to their location, require a certain amount of light throughout the whole of the business hours, while in many cases lighting is carried on past the ordinary time of the private house peak, and therefore helps to augment the station load factor to a considerable extent. In spite of this fact, however, a good many supply authorities have not availed them-

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selves to any special extent of facilities for pushing this class of business. For example, in Liverpool where one would expect a strong and enterprising organization for securing this class of work among the many large business premises to be found in perhaps the greatest seaport city of Great Britain, there are no special arrangements for developing this class of business except the ordinary method of canvassing and submitting any estimates that may be required for work of this character. This may be taken as the embryo stage of sales organization in which a large number of the important electricity supplies in Great Britain are at present.

In the neighboring city of Manchester the process of business getting is considerably further advanced, although it is limited to a general campaign without the development of any special feature in the direction of shop and window lighting. Care has been taken to distribute information relating to electric lighting in a very free manner, the shops having been canvassed by competent sales engineers belonging to the staff of the Corporation Electricity Department. In addition to these, the electrical contractors of the town work in harmony with these movements, by also sending out canvassers, and this auxiliary aid is of very great importance as there are a large number of electrical contractors in the city, all of which are eagerly seeking for business. The result of this combined activity has been most satisfactory inasmuch as all the important shops are lighted electrically.

In order to stimulate the use of all classes of signs and illuminated addresses, a special rate of 2d. per unit is quoted by the corporation for this service, but for lighting shop and business premises, only the ordinary rates are charged. The corporation has taken up the attitude of leaving the supply of electrical apparatus entirely to the electrical contractors, confining its attention to facilitating as far as possible the adoption of special apparatus, and the encouragement of its use.

Perhaps the two chief companies operating within the area of the capitol are the City of London Electric Lighting Co. Ltd., which confines its operations to the city area, that is to say, east of the Law Courts, and the West End, Charing Cross; and City Electricity Co. Ltd., whose operations extend, not only to the city area where it is to a certain extent competitive with the company already named, but also to the large and luxurious area to the west, occupied by many of the most important business houses and theatres. It is interesting to compare the methods of campaign of the two companies having regard to the different classes of business which they endeavor to cultivate. The number of shops in the city area in which the former company operates is small compared with the west end districts, and, inasmuch as the city becomes practically deserted at an early hour in the evening owing to the closing of the large bulk of office premises, the city shops, with very few exceptions, make no attempt to compete with west end establishments in the matter of display. Therefore, there is no special plan of campaign adopted by the City of London Electric Lighting Co., Ltd., to foster this class of lighting, except that specially low rates are offered for the supply of electricity to outside arc lamps and advertising signs. The rate for the former is fixed at 3d. per unit, while the latter is charged at 2 1-2d. per unit.

It may be said incidentally, that all over the United Kingdom the flame arc lamp has been recognized as a most valuable means of advertising when hung outside the show windows of shop premises, and in London this tendency became so marked that County Council Regulations with regard to the shading of these lamps were given out, inasmuch as the illumination from these lamps, some of which were hung at a comparatively low level, was regarded as somewhat irritating and dazzling. Owing to the

campaign of the City of London Company with regard to arc lamps and the rates which they offer a large number of such lamps have been fixed in the chief streets, but electrical advertising signs are seldom used in the city for the reason that during the late lighting hours the population is chiefly congregated in other parts of London.

Turning now to the way in which the Charing Cross, West End and City Electricity Supply Co Ltd., undertake their business campaign; this company employs in selling electricity a staff of canvassers who, in addition to experience in general canvassing, have a more or less technical knowledge of the subject of electricity and in the case of power canvassers, good technical knowledge is essential. These canvassers make daily reports of their calls and a complete record is kept of the actual and probable requirements of every consumer in the area. This system is extended also to the case of non-consumers where it is sought to displace gas or steam by electrical engineering, and by this means opportunities for expansion in any district supplied by the company are immediately known. The canvasser's call is followed up by literature, pamphlets and extracts from newspapers which have dealt with the subject of electricity, and discrimination is of course shown as to the particular sort of literature which is to be sent out in any particular trade. As a result, the illumination of the large number of shops in this area is one of the features of London, which is conducive to the brilliant effect which that metropolis has upon any one visiting it for the first time.

It may be interesting to particularize by the way some of the other results which have accrued from the energetic business policy adopted by this company. They supply some 30 theatres out of 35 in their area, and while not undertaking the details of the work in the spectacular dramas, they, of course, have to make provision for the exceedingly large quantity of energy required at Christmas time in the various pantomimes and extravaganzas. In one instance they had to supply energy to an electric curtain which contained over 1,000 lamps, and there have been numerous other incidents of very large calls indeed for energy. In the case of the Coliseum, the stage, capable of having four or five scenes set at one time, is revolved by means of motors supplied by energy taken from this company. As the district is a business area the company find a considerable call for radiators for heating, and this work is undertaken by means of canvassers and is pushed by the joint advertisements of the London companies in the public press.

In this connection joint advertisements have been placed in such papers as "The City Press," the "Westminster Gazette," "The Daily Express," and the "Financial Times," all of which have a large circulation among the business community and have been very effective means in producing business. The company also let on hire and hire purchase* such equipment as motors, radiators and cooking appliances under agreement. In this connection, the recent Electric Lighting Act of 1909, which protects from distress or bankruptcy, the companies who supply on hire and hire purchase* will undoubtedly have a very stimulating effect upon this branch of the business.

Other companies in the metropolitan area, which are making extensive progress in the application of electricity supply to business requirements are the Westminster Electric Supply Corporation, The St. James, Pall Mall Electric Light Co., and the Electricity Department of the St. Marylebone Borough Council. The London Companies have a conference of the managers in which the requirements of consumers and other general matters relating to electricity business are discussed and views interchanged, so that the general wants of the public may be understood by those companies catering for their needs in London. As

*The British term for monthly installment payments.

the outcome of this conference the general publicity campaign referred to in the opening paragraphs of this article has been evolved.

It is of course a very difficult thing to make comparisons as to the relative energy of various supply authorities in pushing business, as such comparisons may be regarded as individous but there is no doubt that as regards this particular phase of the question the Newcastle-upon-Tyne Electric Supply Co. Ltd., and its associated companies have for some time past been doing pioneer work in a manner which has met with marked success, and it is proposed here not so much to refer to the results achieved, which have been very considerable, but to give one or two details of the methods adopted by this company in securing shop and business premises lighting.

The methods of the associated companies differ somewhat in the different districts which they supply. Roughly, two classes of districts are dealt with, these being firstly, the central portion of Newcastle where the shops are large and doing a big turnover, and, therefore, spending a considerable amount of money during the year on advertising and display and, secondly, the outlying portions of the Newcastle area, such as Byker, Heaton, Gosforth and the smaller and poorer townships such as Whitley, Jarrow, Chester-le-Street, and Durham City.

In the central area, besides the usual business getting organization, including canvassers, show rooms and other displays, the companies endeavor to develop the display business by means of special propositions. The principal proposition dealt with the use of flame arc lamps, and was introduced when these lamps first became a commercial success. The proposal was the supply of current to any shopkeeper or combination of shopkeepers at 4 1-2d. per hour of burning, for each set of 4 or 5 6-ampere flame arc lamps, burning in series. The number of hours the lamps burned was measured by cheap hour meters, of a pe which worked the clock when the current was passing and did not work at all when no current was being used. This proposition was very popular and resulted in some 400 or 500 flame arc lamps being connected up in the central part of the city. The arc lamps themselves were, where required hire purchased to consumers on a three-year's basis, and in certain cases the companies also undertook the recarboning of the lamps. Due to the cost of the carbons, however, and the short hours over which the lamps burned, the companies always endeavored to train up consumers to recarbon their own arc lamps, thus saving the expense.

Owing to the successful operation of this scheme the companies developed another special proposition for similar lamps for use in the outlying districts, and have offered miniature single enclosure, 3-ampere arc lamps, burning two in series on 240 volts, at 3d. per hour of burning per pair. This proposition was specially arranged to enable arc lamps to replace the large number of four and five burners gas arc lamps which have been put up in recent years by people who cannot afford the capital outlay nor the expenditure for current on a set of flame arc lamps. This is a new proposition but is steadily becoming popular.

A very strong feature has been made of the circularization of probable business consumers for the purpose of inclining them to the use of arc lamps for advertising purposes.

Another department which has been pushed with considerable activity has been a special proposal for the centre of the city which is designed to induce shopkeepers to keep their shop windows illuminated so long as the streets are used, say till 10 or 11 p. m. This proposition was to the effect that any shopkeeper keeping his windows illuminated after the shop was closed up could secure the current necessary for this purpose at 1d. per unit. This result is attained by hiring a time switch and second meter, the time switch being connected up so as to

switch over the window lighting from the ordinary meter on to the special meter, at a pre-determined time which was in no case before 7 p. m. The time switch then cuts off the lamp circuits entirely at 10 p. m. or 11 p. m. as the case may be, and all units recorded on the special meter are charged at 1d. per unit.

This also has been a very popular proposal and probably some 50 or 60 shops are now lighted up after closing hours. The advantage of this to the electricity supply is that a considerable load is maintained until a late hour in the evening, this assisting to increase the load factor of the generating station. As in the arc lamp campaign, a series of follow-up letters was sent out and a pamphlet, which included testimonials from users of the late hour device with one or two photographs of shops at a late hour in the evening. This class of business was found to be so satisfactory that a further campaign was taken at a later date when circular letters, printed in two colors, were sent out and accompanied by a very striking folder enclosed in a suitable envelope to attract attention.

A special proposal was made in one street to induce the large shopkeepers to combine in order to create a good effect. In this case a 6-ampere flame arc lamp was supplied, fitted up and wired for £5.00 per annum, provided that some 20 shopkeepers agreed to take between them not less than some 24 lamps. This proposal was adopted by a committee of the shopkeepers, and as the result some 350 yards of street are lighted with flame arc lamps at small intervals apart.

The situation with regard to signs in Newcastle is not so satisfactory, as the associated companies have found it almost impossible to develop their use owing to the restrictive by-laws of the corporation. They have endeavored to make contracts with sign users at an agreed sum per annum for a term of years, the companies to keep the signs supplied with current during a specified schedule of hours, and also to keep the signs in good order and supplied with lamps of good quality. As regards small signs for window display the companies have not considered them sufficiently reliable to be worth pushing greatly. While many very effective small signs have been brought out on to the British market, a good many of them appear to get out of order in a comparatively short time, especially when not under technical supervision, and when this is the case they are not repaired by the consumer so that they go out of use.

The result of these enterprising methods has been very marked and the city of Newcastle-on-Tyne is perhaps one of the best illuminated provincial centres of Great Britain. The activities of the companies as indicated above is not limited to the municipal area, as the power in bulk supply system of the associated companies now extends over an area of approximately 640 square miles in the counties of Northumberland and Durham. In this area there are a large number of large and small towns available to the operations of the companies and in these places the same pushing tactics are adopted, with the result that even the smaller business premises are fully aware of the advantages of electric light.

From the above survey of British business getting activities in electricity supply it will be seen that a considerable disparity exists in the stage of development in different areas, but the general tendency is undoubtedly, at the present time, in favor of more energetic business getting methods, and it is to be confidently expected that in the near future when the United Kingdom has recovered from the temporary wave of commercial depression from which it has suffered, the application of electricity will progress in a very rapid manner in such areas as adopt the more progressive types of business getting activity which have been outlined above.

Methods of Obtaining New Business

By L. A. Pettit, Jr., General Manager
Middletown Lighting Co.,
Middletown, Ohio

Abstract of paper read before the Convention of the Ohio Electric Association, Cedar Point, O., July 26-28, 1910.

We should analyze the meaning of the term "New Business." Does it merely mean the addition of new customers? Surely not! Rather it means business promotion and stimulation. It is hardly possible that merely the addition of new customers would result in profit. In order that your efforts be profitable, you must first of all create an interest in your company and the commodity which they are offering for sale. As much, if not more, time and money should be expended in the education and in

L. A Pettit, Jr.

the stimulation of interest among your present consumers than among your prospects.

In order to excite interest you must display a real feeling for the welfare of the community which you serve. By so doing you cannot help but gain the good will of the public, and their good-will is the vehicle in which you must ride on the road to success.

Electricity has unquestionably been the greatest factor in the developments of this, the 20th century. It has been adapted to use along every line of activity. You should forcefully present this fact to your people and educate them in the many uses of your service. Do not feel that in doing this you are merely building a load for your power plant, but feel that you are accomplishing a greater work, in the benefits you are bringing to your fellowmen.

If you were sales manager of a manufacturing concern, would you provide your salesmen with funds and instruct them to make whatever towns they might choose? You would not entertain such a thought. Organized and systematic effort would be your policy. How many central stations do you know of in towns of fifteen thousand that are pursuing this method of obtaining new business? When I speak of organization and system, I do not mean a force of experts, and a string of red tape: rather, I mean that you must gather complete information as to existing conditions in your community, and get it tabulated in as simple and convenient a way as possible; you should tabulate the location and description of every wired and unwired building, data covering every factory, their production, their operating conditions, and their power and lighting requirements. A good way to handle this information is by means of a card index system, indexing the cards in reference to the location of the buildings covered by the information on the cards. Various colored cards may be used, indicating wired and unwired buildings. You should be able to instantly determine whether the party who lives at No. 208 A Street has your service connected, if not, whether the house is wired, etc.

No less in importance is the employing of clean-cut, capable and industrious men in the various departments of your company. Educate them so that they are able to solicit business as well as perform the duties of their particular positions. Keep them informed as to the latest developments in current consuming devices, give them the talking points, show them the applications to the needs

of your people. Teach them the fundamental principle of good illumination, tell them of the possible application of electrical power to the industries of your city and explain the advantages of individual and group motor drive.

You must work, and work hard. Don't allow yourself, or your men to follow the hour-hand of the clock. Don't let any one miss an opportunity just because it is after hours. The hours of darkness afford you the most favorable conditions for presenting an argument for better illumination, sign or window lighting.

It is not expected that such an organization will be able to cope with any situation which may arise. The electrical manufacturers stand ready to lend assistance when needed and will furnish you with power and illuminating engineers, demonstrators, or special appliance men, whichever the case may demand. I know of one large manufacturing company that has spent an approximate average of $100 per month for the last nine months on a power campaign for a central station in a city of less than fifteen thousand population—a lamp company spent nearly $400 on a sixty day whirl-wind lighting campaign for the same company.

All that is asked of you is to co-operate, and it might be well to explain that co-operation does not mean that you should crawl down in the chair behind your desk and say, "All right, go just as far as you wish."

Other important matters to be considered are a display room and advertising. It is not necessary to equip an elaborate electric shop, having expensive decorations, and to display every electrical contrivance that is manufactured. Have a suitable space in front of your cashier's window equipped with a wall case, such as is used by jewelers, a display rack arranged to show the cost of operation of various types and sizes of lamps. Display such appliances as are within the reach of the pocket-book of your average customer. I mean appliances that might be classed as necessities rather than luxuries. You can arrange with manufacturers to furnish you with washing machines, vacuum cleaners, pumps, coffee mills, food choppers, forge blowers, and small machine tools on thirty or sixty days consignment for demonstrating purposes. Have as large a display window as possible and make it attractive. Place in it mechanical displays, demonstrators, etc. Change that display every week. Remember that one thing well displayed is better than to have the window filled with something which does not pertain to your business. Make it distinctive. Keep the people's attention fixed. Last, but decidedly of no less importance, have it properly illuminated.

Your advertising need not be elaborate. The use of stickers on your bills, posters on bill boards, attractive post cards sent direct by mail, transparency signs in manholes along the sidewalks, and lantern slides used on the screens in theaters produce the maximum results. I believe that owing to the usual high rates for space and the small circulation, newspaper advertising will not prove very practical in the smaller cities, only for use during special appliance sales or campaigns.

If your company hasn't an electric display sign, get one. It will be of great value to you, for it will indelibly impress upon the mind of the newcomer and stranger, the fact that there is a live electric company in the town. Always be leaders, rather than leaners, and remember the old adage which says: "The constant dripping of water wears away the stone."

"The Obsolete Superlative"

[From the Electrical Times, London]

An amusing letter has reached us from a certain provincial town. It seems that, as a counterblast to the efforts of the local electricity supply company, the gas people issued one of these highly inflated circulars, much on the customary lines, warning house-

holders that "electricity was four times dearer than gas." This circular happened to be studied by a householder who had been content to use gas, and had shown no particular desire to take advantage of a supply of electricity. The circular appealed to his common sense, however, and led him to the deduction that if electricity was really "four times dearer than gas" it must possess some astounding merit to be used at all, and being in a position to regard with equanimity the extra cost involved, he arranged for the electrification of his house.

When the first full quarters bill for electricity came along, he regarded it as sufficiently instructive to take it to the gas company, together with his gas bill of the corresponding quarter of the previous year, also with their famous circular. The gas company were not exactly delighted, for the bills showed that electric light, instead of being "four times dearer," was actually cheaper than gas. And our correspondent adds that the local electric supply has secured a splendid honorary canvasser. There are a great many people, in these enlightened days, who strongly resent an implied insult to their intelligence. They scout superlatives, and anything which is advertised as "far and away the best," without any apparent title to that claim, may count on their active hostility.

Not in the Public Eye

One reason for the slower movement of the electric vehicle has been the lack of spectacular features in connection with its development. No millionaire or prominent sportsman has had the ambition to drive a motor wagon or truck in a Glidden tour or from coast to coast, nor has there been the same inspiration for automobile clubs to organize contests solely for the advancement of the commercial vehicle industry. As a consequence, the early experiments and tests of the motor truck have been of a more or less private nature, but nevertheless they have been as exacting and in most cases a great deal more exacting than the public tests of pleasure cars.

A 110 Mile Route

If a department store attempted to send a horse out over a route of 110 miles in the course of the day, what would become of that horse in the course of a week, if it lived that long? Yet there is a big department store in New York that has a route of that length, served handily and capably by the motor truck. The increased radius of delivery means more customers, and more customers, as a rule, mean greater income.

Why Electrics Wear Longer

The absence of jarring and pounding is one of the great differences between the electric and the gasoline autos. With an equally strong framework and mechanism (or even with a somewhat lighter one for the electrically propelled vehicle) it takes no expert to see that the madly thumping one will be the one that will need the frequent repairs and that will give out much sooner than its smoothly purring competitor.

The Man Who Helps the Editor

It isn't the man who slaps my back
And bids me smile when I'm feeling blue;
It isn't the man who grasps my hand
And listens my hard-luck story through,
It isn't the man with the cheerful words,
Who does the most when the wolves all yelp,
But the man who digs in his pocket deep,
And says, "Old pal, will a two-spot help?"

A cheery smile helps some, I know,
And a kindly word makes a fellow start
Anew sometimes when his burden's great,
But the way to get at a fellow's heart
Is to go to him in his hour of need
And scatter his clouds of gloom and doubt,
Put your hand in your pocket and say to him:
"Old pal, will a two-spot help you out?"

Subscriptions still received at $2 per year, with a guarantee of your money's worth or the money back.—*Exchange.*

Our subscription price is only fifty cents per year, but the sentiment is all right.—*The Natl. Elec. Contractor.*

Well, one dollar is our figure. Dig down! —Editor.

The Elements of Rate Making*

With a Comparison of Six Rate Systems in Use Among Central Stations in this Country

By A. G. Rakestraw, Allegheny County Light Co., Pittsburg, Pa.

As we approach this problem we discover that it is two-fold. First, we have to determine the cost of the service, including all the fixed and variable quantities, and next we have to decide what system of rates will best provide for these costs.

The cost of service has been made the subject of extended study by Messrs. Hopkinson, Doherty, Doane and others, and there is but little that can be added to their analyses. Briefly stated, the cost of furnishing the current may be subdivided as follows:

The cost of energy and lamp renewals (which are proportionate).

The fixed charges which vary with the demand only.

The fixed charges which are affected by the conditions of distribution.

The fixed charges which are independent of the size of the installation, such as meter reading, billing, etc.

The cost of connection.

Having determined what are the elements entering into the cost of service it remains to consider how these expenses may be best provided for in the system of rates. If we were to follow the schedule of expenses, item by item, we would have a system as follows:

1. A connection charge to be made once only, on installation.
2. A fixed meter charge per month, the same for all customers.
3. A fixed charge per lamp or per hp. per month, varying slightly with different conditions.
4. A charge per kwh. consumed.

Now having determined, as nearly as possible, just what charge should be made to cover each item of expense, the question remains as to whether it is desirable to follow this schedule, and if not, what other method shall we use. In this connection, I claim that it is not desirable, even if possible, that each consumer should be compelled to bear the exact proportion of the fixed charges, as to do so would work hardship and invite competition.

Let us consider a few examples from other lines of business. A merchant, whose fixed charges, such as rent, light heat, and supervision, amount to $200 per month, and who counts 2000 customers during that time, decides that he will adopt the plan of fixed charges for fixed expenses. Accordingly he proceeds to assess each person entering, the sum of 10c. to cover this item, and marks down his goods to make a profit on the cost of selling only. Now while we recognize the correctness of his calculations, we also see at once the defect of the system. If there were no other store accessible, it would work hardship to the small purchaser, and if there were competition, the merchant would lose his small customers at once.

It is true, we might devise some plan by which the customers who took the largest share of the merchant's time and attention would have to bear the largest part of these fixed charges, but even then the burden might fall the heaviest on those who bought but little or even nothing at all. As a matter of fact, the storekeeper often has to give more attention to some one who comes in late or makes a small purchase right on his Saturday night "peak" than to another who makes a large purchase at some other time.

*[It is not Mr. Rakestraw's purpose in this article to cover any new phases of the rate problem, but rather to make a simplified comparison of the several systems of computing the value of service. A common fault of most rate papers is that they shoot far above the heads of many men who, on the firing line, have the greatest need for a well balanced conviction. With this in mind, Mr. Rakestraw has prepared this elementary presentment of the rate problem.—Editor.]

Again, it costs a barber more to shave a customer on Saturday night than it does on Monday morning, and yet he receives no more. In both these cases there is a loss on one customer which is borne by another.

Let us consider one other case. The railroad company will carry a passenger 5 miles for 10c. or 500 miles for $10.00. Now if the short haul passenger had to bear his exact share of the expense necessary to stop the train for his convenience, especially if he was the only one traveling between these points, his 5-mile ride would cost him 25c. or $1.00 or perhaps more. In other words, the rate would be prohibitive. Our lawmakers have recognized that to strictly apply the idea of fixed charges to fixed expenses in this case would work a hardship to the short haul passenger, and have therefore put a legal limit to the rate.

The foregoing examples are not cited as ideal, but to illustrate the fact that in making a rate there are things to be considered other than the cost of service. In general there is this, the relation of the public service corporation to society, or we might say, the duty of the corporation to adequately accommodate the public. And it appears that in order to do this, the larger customers must bear some part of the burden of the fixed charges which theoretically should be borne by the small customer, but which, in the absence of competition would render the service prohibitive. I might also say that this principle is coming to be more and more recognized, for public service commissions are being formed to give it their attention, and the corporations themselves are beginning to realize its justice.

Now in selecting a system of rates which will be the best for all concerned, let us consider some that have been used and proposed. First, the flat rate which formerly was extensively used, but which is now recognized as unjust and undesirable, because it encourages waste, and is unfair to the economical customer.

Second, the uniform meter rate, which might do fairly well if the entire load consisted of one class of business, such as residences, but which is manifestly unjust from the electric light company's point of view, since some kwh. cost so much more than others. Besides this, a meter rate discourages the free use of current.

Third, a varying meter rate according to the character of the load and the amount of business guaranteed. This is probably the most used system of any in this country and it has some good points. There is an attempt to differentiate between the short-hour and the long-hour customer, and if the rate and guarantee are properly chosen it is possible to secure a comparatively fair division of charges. The guarantee, however, should be on the basis of so much per lamp per month, rather than on a certain amount total per month. The weak points of this system are that it encourages free use of the current only up to the point of guarantee, and the high guarantees necessary to secure low rates are discouraging; moreover, there is usually no provision made to accommodate a business which varies greatly in its demands with the season, or with market conditions.

Fourth, a fixed charge plus a meter rate. This system is theoretically correct, but is open to the objections stated in the preceding part of this article. Moreover, customers in general are not educated up to the point where they understand why they should pay a charge when there has been no consumption. Indeed, there are some that object to a 50c. per month minimum charge. Furthermore, this system, if the fixed charge is correctly apportioned, invites competition from small isolated plants. This is the reason why central stations that adopt this system also retain an optional straight meter rate.

Fifth, a controlled flat rate. This system of rates has been rather recently proposed and is attracting some attention. The idea is to allow the customer to install as many lights as

he desires, but to place a controlling device in the circuit which will allow only a certain number to be used at once. This method is better than the ordinary flat rate since the demand is limited and there is a check against dishonesty through the addition of lights. The most of the objections against the one are also true of the other, for extravagance against unnecessary burning is not wholly avoided and the economical customer has no advantage over the wasteful one. Besides this a customer desiring to use quite a number of extra lights, as in the case of a social function, is put to considerable inconvenience.

The sixth method is one which I consider to have more advantages and fewer objectionable features than any other, but it is not at all new. On the contrary, it is used successfully in a number of places and appears to be growing in favor. It is the Wright demand system. The principle is as follows: An indicator is placed on the consumer's circuit which registers the maximum demand of the consumer during any desired period. The consumer is then charged a certain rate for one hour's use per day, or the maximum demand, a lower rate for the second hour, and so on. For instance, say that the demand indicator of a customer showed 2000 watts and that his consumption for the month was 600 kwh., he would receive a bill something like this:

60 kwh.	@	10c.	$6.00
60 kwh.	@	8c.	$4.80
60 kwh.	@	6c.	$3.60
60 kwh.	@	5c.	$3.00
60 kwh.	@	4c.	$2.40
300 kwh.	@	3c.	$9.00
600			$28.80

Average rate, 4.8c.

The only way to arrive at the maximum demand in the case of a factory, or other large installations, is to use a demand meter, but in the case of residences and a good deal of the small commercial load it can be very readily estimated. The advantages of this system are that the free use of current is encouraged and yet the average rate is kept from getting too low. The guarantee is nominal. The system automatically accommodates itself to the needs of a business whose consumption is variable from month to month. The principle of this system is exactly the same as used by the printer in charging for his work. Instead of making a fixed charge for setting up the work plus a rate for running through the machine, he charges a high price for a small quantity and a lower price for additional copies, but the fixed charge is included just the same.

No mention has been made of the character of the load, whether light, heat or power, nor is it necessary, as the central station sells none of these. It furnishes electric current. It matters not the slightest whether the current is used to light a parlor, run a trolley car or in an electric furnace for making carborundum. I maintain definitely, that neither the purpose for which the current is used nor the efficiency of the devices which convert it into light, heat, power, or chemical energy, are factors which need affect the rate system. There are, of course, special cases, as, for instance, refrigerating machinery which by agreement is shut down at the peak hour every evening. The demand on this could be considered practically nothing, and therefore it could take the lowest rate. Another case would be that of a summer resort which uses capacity probably only needed during the winter peak.

In regard to the high efficiency lamps, it has been suggested in order to gain for the central station part of the saving over the older type, that the fixed charges be assessed on the basis of cp. installed rather than wattage. I do not consider this plan feasible. It will not stand analysis by the public, who will demand all the saving obtained by the use of the new lamp. Of course, to consider an extreme case, if all the present light users were to adopt at once a new light source of double the efficiency of those now

in use, thus cutting the revenue of the central station in two, the fixed charges remaining the same, an increase in rates would be inevitable. But so far this has not happened. The change has been gradual, and the rapid increase in the number of customers rendered possible by the new lamps themselves, and other causes, have combined to increase the revenue in most cases.

There is one field, however, where the company may secure part of the benefits obtained through the tungsten lamp. I refer to signs on a flat rate, including renewals. When a sign is changed from 4-cp. carbon filament to 4-cp. 5-watt tungsten at a flat rate of from 10 to 12 cents per lamp per month the customer not only gets his sign cheaper but the company gets more for its current. High efficiency lamps are forcing central station companies to consider more rational systems of charging for current and to hustle more for new business, and therefore they have brought a big benefit to all concerned.

In regard to lamp renewals, no special treatment has been thought necessary because this is a factor of essentially the same character as cost of energy. For instance, free renewals of the gem lamp cost about ½ to ¾c. per kwh. and just that much more has to be added to the selling price. If tungsten lamps were not so fragile and liable to be broken by carelessness, they could be supplied on exactly the same basis, but it would be necessary to add 2 or 3c. per kwh. to cover the expense.

WATCHING THE CHARIOT RACE SIGN

This is a reproduction of a flash light photograph of the crowd which packed the sidewalks on Broadway, New York City, the night the big "Chariot Race Sign" was turned on for the first time, as described in the August issue of Selling Electricity (Page 17-21). It is estimated that a half million people watched the sign. Though the Police Department reported the crowd as heaviest at Herald Square and south to Thirty-second Street, twenty-five extra patrolmen were detailed to keep the traffic open at the corner of Broadway and Thirty-fourth Street alone. The sign itself is mounted on a high building at Broadway and Thirty-eighth Street and represents a chariot race, above which run the advertisements of a number of leading manufacturers. This picture was taken from the sign itself.

The New England N. E. L. A. Meeting

The second Summer Convention of the New England Section of the National Electric Light Association will be held on September 12 and 13 at "The Griswold," New London, Conn.

The program embraces the following papers:

"The Advantages of a Uniform System of Rate Making," by Howard Corning, Bangor Ry. & Elec. Co., Bangor, Me.

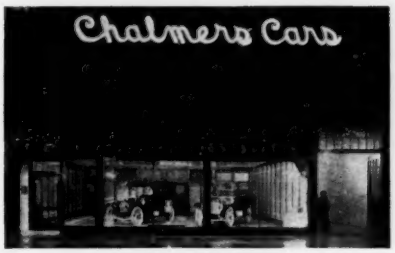
"Illuminated Advertising—Its Possibilities," by L. D. Gibbs, Superintendent of Advertising, Edison Electric Ill. Co. of Boston.

"Special and Decorative Street Lighting," by J. A. Hunnewell, Lowell Electric Light Corp., Lowell Mass.

"Opportunities," by Levin J. Chase, Concord Electric Co., Concord, N. H.

Another Denver Window

This show-window of the Chalmers Automobile Co. is said to be the best illuminated sales front in Denver. The room is illuminated by means of 8 250-watt tungsten lamps placed on



the ceiling just back of the show-windows, and fitted with proper reflectors.

The local agents of the car are very enthusiastic boosters for both electric sign, window and interior lighting. The electric sign shown at the top of the picture is a flashing script which has the appearance of being gradually written out until the entire name is spelled.

Vermont State Convention

The annual meeting of the Vermont Electrical Association will be held at Brandon, Vt., September 28th and 29th. In conjunction with the National Electric Light Association and the Vermont Historical Society, "Davenport Day" will be observed to commemorate the invention of the electric motor by the unveiling of a suitable tablet. The exercises and speeches by prominent men in the electric world will be at Forestdale, a suburb of Brandon, at the shop where the motor was invented by Mr. Davenport, and will be participated in by some of Mr. Davenport's descendents. These ceremonies will be held September 28th, and the 29th will be devoted to a barbecue at Lake Dunmore.

Pennsylvania State Convention

It is reported that the Convention of the Pennsylvania Electric Association to be held at Glen Summit Springs Hotel, Glen Summit Springs, Pa., September 14, 15 and 16th, will be made as attractive as possible from every point of view. The location 2500 feet above the sea level is easily accessible, being on the main line of the Lehigh Valley Railroad; all trains stop at the Hotel.

There is an opportunity for boating, bathing, baseball, tennis, bowling, shuffleboard, pool, billiards, driving and automobiling. The scenery is beautiful and the air and water the purest in the state.

The Program Committee has arranged papers on the following subjects:

Steam Heating.

Advantageous Points in Station Operating.

New Types of Lamps from the Operating Standpoint.

Operation of Electrical Vehicles.

Domestic Appliances.

Investment Justified by Smaller Companies for Securing Power Business.

Rates.

Colorado State Convention

The Colorado Electric Light, Power and Railway Association will hold its eighth convention at Glenwood Springs, Colo., on September 21, 22, and 23.

Present indications are that this convention will be one of the largest and best ever held by the Association.

The Committees on Grounded Secondaries, Insurance, and Meters have interesting reports to make and the following papers will be presented by members well qualified to handle the different subjects:

"Storage Batteries in Street Railway and Central Station Work."

"Attitude Which Central Stations Should Maintain Towards Their Customers."

"Mazda Series Street Lighting."

"High and Low Tension Pole Lines."

"High and Low Pressure Turbines."

"The Place of Rotary Condensers and Induction Generators in Transmission Systems."

What Progress is Being Made in the Introduction of Electric Vehicles in Ohio

By J. T. Kermode, The Cleveland Electric Illuminating Co., Cleveland, Ohio

Abstract of Paper read before the Ohio Electric Light Association Convention, Cedar Point, July 26-28, 1910

Electricity for motive power in the automobile business has been used principally in the development of pleasure cars for strictly urban use. Now, however, the electric vehicle is rapidly encroaching upon the field of the gas car. If the central stations expect to benefit by this development, they must, in their own localities, inaugurate a system of inspection of batteries and transmission gearing that will insure good operating results to the owners of electric cars.

This does not necessarily mean the establishment and operation of garages by the central station, but does mean the employment of labor skilled in electrical and mechanical engineering pertaining to electric vehicles, in order to educate the public garage men in care and maintenance of batteries and transmission, and the owners of cars in care of charging and in the knowledge of results that should obtain from the services of necessity performed by the garage.

Many owners of gas cars are also enthusiastic drivers of electrics, claiming that for use over good roads and within restricted areas of travel, the electric has many advantages in point of convenience over all other means of locomotion. Generally speaking, these claims are well founded, and in addition thereto the electric propelled vehicle is economical in its operation. Further, used for commercial purposes, a properly selected electric will successfully compete against all other present motor or horse propelled delivery wagons. The author has knowledge of a firm operating five electric delivery wagons, in which the average mileage per wagon, per day, is 45 miles, that 60 to 80 miles is often obtained, and sometimes even 95 miles has been recorded on a single wagon in one day.

Cleveland is perhaps more favorably situated than some cities for the development in the use of electric vehicles by reason of the large number of electric machines manufactured there, and because of that city's good and level roads, yet these favorable conditions alone are not sufficient to account for the comparatively small number of electric cars in use in most other cities as compared with those in use in Cleveland. According to my count of the license tags issued as of April 1, 1910, by the state of Ohio, there were in this city 1006 pleasure and 24 trucking electric vehicles in operation, making a total of 1030 electrics, whereas in the whole state there were only a total of 1796 electrics of both classes. Had the use in other cities which at that time contained electric cars been extended to the same degree as in Cleveland, there would have been in use in the state approximately 4500 electric machines instead of 1796. In Cleveland the ratio of electric to gas and steam cars combined was 1 to 4. In the whole state the ratio was 1 to 10.

An analysis of the conditions under which vehicles are being charged in Cleveland, shows that there are 596 private charging stations and 14 public charging stations. It is estimated

that the central station furnishes the current for 900 and isolated plants furnish the current for the remainder, or 130 cars.

The number of private mercury rectifier stations, the number of private motor generator sets and the number of public charging stations, using the central station's service is: Private mercury rectifier stations, 408; private motor generator stations, 188; public charging stations, 8. Of the total 596 private stations, 136 were separately metered and 460 were connected to the house lighting meter, hence in Tables 3 and 4, showing the number of customers, units of electricity used and other items, relating to private rectifiers or motor generator sets, the units shown include the current used for lighting and other purposes by those customers.

TABLE I.

Motor Generator Sets Metered Separately.

Year	Month	No. Cust.	Total K.W.C.	Total Units	Avg. Daily Hrs. Use.
1909	June	42	63	4247	2.25
	July	39	46	4169	3.21
	Aug.	37	41	3619	2.94
	Sept.	44	48	4726	3.28
	Oct.	44	49	4400	3.00
	Nov.	46	52	4387	2.81
	Dec.	46	53	4664	2.93
1910	Jan.	53	61	4914	2.69
	Feb.	51	59	3397	1.92
	March	51	59	3620	2.05
	April	51	60	4638	2.58
	May	55	71	4564	2.14
	Total units one year			51345	
	Avg. Daily Hrs. Use One Year				2.60

It is well known that fewer cars are operated during the winter months than during the warmer months, and so the similarity of the figures, in the average-daily-hours-use column, Tables 1 and 2, compared by months, indicates that those cars which are used during the winter, principally because of road conditions, require more current for their operation. Reasoning from this the demand for electricity by a large number of cars would be practically uniform throughout the entire year.

TABLE II.

Rectifiers Metered Separately.

Year	Month	No. Cust.	Total K.W.C.	Total Units	Avg. Daily Hrs. Use
1909	June	60	150	7946	1.77
	July	56	140	8481	2.01
	Aug.	52	130	6657	1.70
	Sept.	62	155	7805	1.68
	Oct.	68	170	7408	1.45
	Nov.	69	172	6694	1.30
	Dec.	69	172	8924	1.73
1910	Jan.	66	165	7541	1.52
	Feb.	69	172	4543	0.88
	March	71	177	5009	0.94
	April	77	192	7673	1.33
	May	81	202	9069	1.50
	Total units one year			87750	
	Avg. Daily Hrs. Use One Year				1.46

TABLE III.

Motor Generators Sets and Lighting Combined.

Year	Month	No. Cust.	Total Units
1909	June	122	17454
	July	121	15270
	Aug.	118	14445
	Sept.	120	17581
	Oct.	125	22045
	Nov.	126	23844
	Dec.	128	26196
1910	Jan.	129	26775
	Feb.	131	18804
	March	133	19032
	April	133	19855
	May	133	18550
	Total units one year		239851

TABLE IV.

Rectifiers and Lighting Combined.

Year	Month	No. Cust.	Total Units
1909	June	277	38281
	July	262	34185
	Aug.	260	31261
	Sept.	286	39577
	Oct.	295	46500
	Nov.	301	50622
	Dec.	302	55750
1910	Jan.	301	59029
	Feb.	306	43059
	March	310	44253
	April	320	47206
	May	327	46652
	Total units one year		536375

It is not the intention in this paper to discuss the relative merits of rectifiers and motor generator sets, but

it is pertinent to point out some features of operation in connection with mercury rectifiers, attention to which may help in the satisfaction to be derived by the owner of an electric automobile. A mercury rectifier has an inherent regulation which automatically reduces the rate of flow of current as the battery e. m. f. approaches the rectifier voltage, eventually cutting out of its own accord, providing the battery is in good condition and the rectifier setting is not too high. Good line regulation is essential, or else the rectifier will go out before the battery has been sufficiently charged, or it will overcharge. Usually batteries are charged at night, and it is good practice to set the rectifier at a point where it will shut off before the battery is overcharged, and if necessary complete the charge next morning. A valuable asset to every private charging plant is a discharge rheostat for the purpose of completely discharging the batteries occasionally. This should be thoroughly explained to all owners of electric cars so that they may realize the importance of treating their batteries properly.

Foremost among the advantages of electric delivery wagons and trucks are, saving in time, prompter deliveries, increased territory that can be served, greater volume of business with less delivery equipment, cleanliness, freedom from liability of fire, lower insurance, simplicity of operation, permitting the employment of drivers at the same wages as a horse drawn vehicle, and the advertising value received by the general satisfaction given to the customer served. The successful operation of these cars depends upon mechanical conditions. Too much stress cannot be laid on the importance of systematic inspections, frequent cleaning, oiling and adjusting of all parts that might have a tendency to increase the friction losses. A slight increase in friction may in many cases reduce the work of the wagon 25 per cent or more. Merchants and manufacturers are interested in their delivery systems, the cost of which is of such importance to them that many up-to-date concerns are gathering information concerning the cost of teaming so as to introduce more economical methods of rendering a quicker and better service.

Numerous instances have been cited where failures in electric trucks can be directly traceable to ignorance of selection, a wagon capable of taking care of an occasional abnormal load being purchased instead of one suitable to operate under the daily average conditions. A uniform or standard rating of various types of trucks is needed to aid in selecting a wagon of good design, equipped with batteries of sufficient capacity to do the maximum day's work without boosting, and on the average day be about three-fourths discharged. As the continuity of service is important it is sometimes advisable to keep delivery wagons in public garages where all night service is rendered, thus permitting inspections and minor repairs being made without delaying the wagon service during the daytime. However, where a number of these cars are used by one firm a competent man may be employed to look after the batteries and be responsible for the results obtained.

Modern Conditions Favor the Motor Wagon

Rents are advancing on stable properties. In the city, feed is becoming higher and the cost of harness is going up. These are items that figure seriously in the case of stables where many horses are kept. Then, again, and this is a very big item, the character of modern pavements is more fitted for commercial trucks and less for the horse.

The wet asphalt is bad enough for the motor, although the heavily loaded car will not skid much, if at all, but for the horse doing heavy trucking it is pretty near an impossibility.

All these things are combining to bring people to the realization that a more efficient substitute for the horse is a necessity.

Electric Power in an Ice Cream Factory

By Henry Flood, Jr., Penn Central Light and Power Co., Altoona, Pa.

During the past spring the Magee Ice Cream Factory decided to make extensive improvements in its plant with the idea not only of enlarging it, but at the same time of making it the most efficient and sanitary factory of its size in the country. Accordingly, a new building having a basement and two stories was erected to house the plant, a brick structure throughout, the floors being concrete and the side walls lined with white tile wainscot.

The old factory had been driven by one 5-horse-power electric motor which operated the freezer and an ice crusher. At the time Mr. Magee first began to figure on the enlargement of his plant, however, we offered our services to him, but found he was of the opinion that with the constant load furnished with an ammonia compressor and the long hours of service, combined with the increased size of the installation, he would be able to drive his own plant cheaper than we could furnish him with power.

We took the horse-power year basis of showing him where his power would cost him more than our charges for service and if I remember correctly in this especial case, based upon a load factor of 15% for the entire year, the cost of steam power was $45.00 per horse-power year as against $37.50 with the electric power. Each of these estimates had charged against them interest and depreciation on the investment and also a labor charge.

This class of business in this territory has to pay about $1.80 for coal delivered and against the steam plant there were also charges for the carting of ashes, boiler and liability insurance and superintendence to the extent of the purchasing of supplies. The actual cost with a 24.2% load factor including labor, depreciation and interest upon the investment, was in the neighborhood of $50.00, while our estimate placed it at about $60.00.

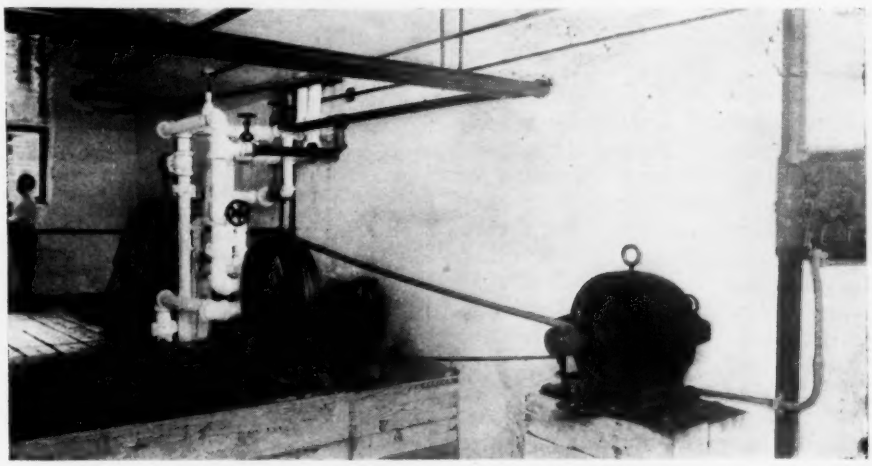


Figure 1. Brine Pump and Can Ice System

Naturally the saving effected would have some effect in getting us this power contract, but I believe that there were two other points which were equally important in enabling us to close up. In the first place, there has been an agitation in the State of Pennsylvania for more sanitary ice cream factories and other factories of a similar nature. Knowing this and being

in a position to install a drive that would tend toward sanitary conditions, we pushed this point to great advantage. Along with this argument we also showed Mr. Magee where he could make a

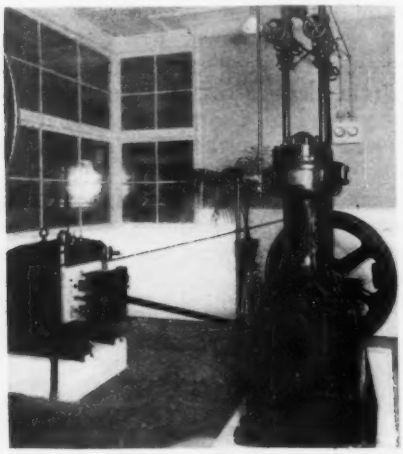


Figure 2. The Pump

show room of his factory by placing all of his machinery in plain view of the public, thus letting them see for themselves the sanitary methods used in the manufacture of the cream, which in itself would serve as an invaluable advertisement. You can readily see by referring to the illustrations that this installation was laid out with that in view.

The other point which carried considerable weight was the fact that the capital necessary to install a motor driven plant was much less than that required to build a steam plant. This was an effective argument, for when you can show the investment to be only $30.00 per horse-power installed in place of $50.00 per horse-power a man usually begins to listen to reason. Still another strong factor was that previous to that time Mr. Magee had purchased his ice from one of the local ice companies, and we were able to show that by installing a compressor of sufficient size he would be able to manufacture his own ice at about one half what he was paying at that time. Of course the ice is cloudy, since a can system without distilled water is used, but for packing it is quite as satisfactory.

We secured the business on the basis of our proposition and the installation was made. Upon the first floor is located the engine room, freezing room and distributing quarters, the engine room being partitioned off from the main floor with white tile and glass partitions. Figure 3 shows an eleven-ton York Manufacturing Company, two-cylinder, single acting compressor, belt connected to a 25-horse-power, Type S, Westinghouse dc. motor. The speed of this motor may be varied by means of a field rheostat.

In Figure 2 is shown the deep well pump made by the American Deep Well Pump Company. This pump is directly geared to the motor, a 5-hp. Westinghouse, Type S. direct current machine. In order to vary the discharge from this well the motor

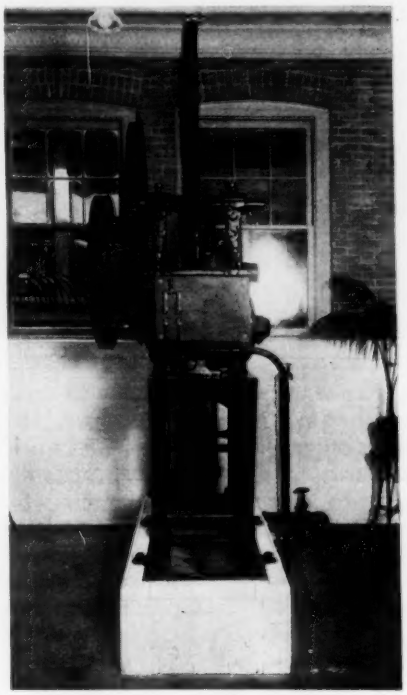


Figure 3. The Compressor

speed is varied by means of a field rheostat. The depth of the well is 250 feet and the diameter of the working barrel used is 3¾ inches. A little trouble has been experienced by

the noisy operation of the pinion due to speed variation, but this will be overcome by replacing the present flywheel with a larger one. Under present operating condition the pump is running at 18 strokes per minute and furnishes sufficient water to take care of all the needs of the plant.

Figure 4 gives a good view of the freezers and mixers, and also the switchboard for controlling the different motor circuits. This motor, a 5-hp. Westinghouse, Type S, drives two 40-quart freezers and one 400-quart mixer. The average length of running per day with this motor during the month of July was ten hours.

On this floor is also located a motor-

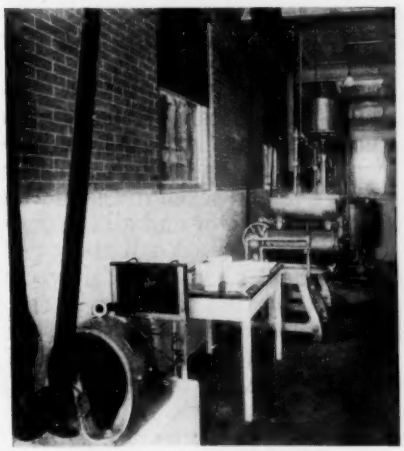


Figure 4. Freezers and Mixers

driven ice crusher and the two cooling rooms. Each is 9ft. 6in. long x 10ft. wide x 9 ft. in height, and they have 855 cu. ft. to be cooled. Shelves are arranged within them made up of brine coils, and one room is used to keep the raw material in, while the other is used for the finished product. The room in which the raw material is kept is retained at between 28 degrees and 32 degrees Fahrenheit, while the finished product is kept between 7 degrees and 8 degrees Fahrenheit.

In Figure 1 is shown a cut of the brine pump and also the can system for ice making. The brine pump is belt connected to 5-hp., Type S, Westinghouse motor, which during the month of July averaged fourteen hours running per day. The ice can system contains 54 sixty-lb. cans, and the amount of ice frozen per twenty-four hours will average 1800 lbs. In addition to the above equipment there is also one 7 1-2-hp. motor operating a 2500-lb. freight elevator.

During the month of July the current consumption for this entire plant was 5624 kilowatt hours, which would give a load factor on the 8760-hour basis of 24.2% with 42 1-2 hp. installed. The amount of cream manufactured through the same period was 11,404 gallons, or the number of gallons of cream per kwh. was a trifle over two. This amount of power included the lighting of the building and also the house of the owner which is located right next to the factory. With the bill for this period at $152.00, the cost per gallon for electric power is about 1 1-3 cents, and the income to the central station per horsepower-year $43.00, which, considering the nature of the load and the fact that there is an off peak clause in the contract, makes this type of load attractive at the above rate.

It is our belief that a central station can afford to take on business of this type at a fairly low rate as their heaviest business comes in the summer when our load is lightest—and tends to flatten out the central stations load curve. Also it is usually very easy to obtain an off-peak clause in these contracts.

After two months operation of this plant Mr. Magee has expressed his entire satisfaction, not only with the sanitary condition that it has brought about, but also with the operating cost. We always feel that such a statement is the highest compliment that can be paid us when it comes from a customer, and we furthermore believe it is the best form of advertisement that we can invest in.

At the present time we have about eight ice-cream factories, large and small, one in fact, having a larger installation than the Magee Factory. The load factor over a year will average at least 15% while in several instances it will run as high as 20%.

The Curve Drawing Wattmeter in the Complaint Department

Illustrations of How this Device May be Employed to Demonstrate the Veracity of the Meter

By J. E. Bullard

Victor Hugo wrote, "Anger may be foolish and absurd, and one may be irritated when in the wrong; but a man never feels outraged unless in some respect he is at bottom right." I believe that this truth applies very forcefully in the central station field, and consequently when the people are dissatisfied with a public utility company the manager should before all analyze his company's policy to see if there is not something there which causes the dissatisfaction.

Experience teaches that the main cause of dissatisfaction among our customers is the manner in which conscientious complaints are investigated and settled. The investigation can hardly be too thorough, but above all nothing must be given the complainant in the adjustment that you cannot absolutely explain and justify in his eyes. It appears to be far more detrimental to give a man more than he deserves than to give him less. No complaint, however, should be considered settled till it is thoroughly investigated, and the advent of the curve drawing instruments make this investigation easy where formerly it was hard. To illustrate I will quote a case in point.

A hotel manager had ordered his employees to burn no electric lights in any part of the building except in the bar alone; in fact, he thought all other circuits had been cut off. He was certain he was using only the nine lights in the bar during the night, yet his bill was so high he complained to the company. They tested his meter and found it O. K., and the report was mailed to him with the information that he must have used the current, but he refused to pay the bill. However, after a time in order to collect it, and to satisfy him, as the company thought, they allowed him a 50% rebate. Now the hotel manager is absolutely sure they were trying to rob him, for he argues: "If they had any confidence in their meter and knew I had used the current they would not have allowed such a large rebate. The fact is, they do not go by their meters at all, but guess at the consumption and try to collect as much as possible from each customer." It is needless to say this man is no longer a customer.

Had a curve drawing wattmeter been installed in this establishment when the complaint was made it would have shown a large consumption of current between five and seven in the morning when the proprietor and all the guests were still sleeping. A call at the place between those hours would have disclosed the fact that the boy who cleaned the dining room had put fuses into those circuits and used electric light every morning, though he was supposed to have used gas.

As a result and because of insufficient investigation the company lost a customer, half the price of three months' current, and made an enemy who is strongly agitating and encouraging municipal ownership. It is not unreasonable to expect that had this man been shown where the current was being used he would have remained a good friend to the company.

I have found men who, during slack times, have put in gas engines because they were sure the electric bill was too high, since it did not vary exactly with the output. One tailor had a factory where several sewing machines were driven from one motor. His output suddenly dropped to 25% of the full capacity of the plant, but the power bill decreased only one-third as much. He was sure something was wrong with

the meter, but that proved O. K., so he put in a gas engine. A curve drawing wattmeter would have shown this man that he had an abnormally large friction load when he drove his large motor and all the shafting to operate a few machines. This would have convinced him that he should have a small motor to drive a small group of machines during slack times.

Also, a recent talk with this man has made me believe that in this instance the figures would have retained his business and caused him to greatly respect the company. All his employees were working by the piece and he had thought that it made little difference to him whether they worked regular hours or not as long as they did what little work he needed done. He was therefore greatly interested when I showed him the difference in cost between full load and partial load on his motor and machines. He said that had it been accurately shown to him at the time of the complaint he would never have put in a gas engine.

A high bill complaint on heating apparatus, such as irons, glue pots and the like, is hardest to adjust. It is usually evident that they have been used extravagantly and many times it is found that they have been left on during the noon hour and occasionally over night, which causes two grounds for complaint. First, the utensils do not stand up well, which makes the maintenance cost high, and second, the current consumption is very high, but though the reasons for this may be very apparent to the central station man, it is not always easy to convince the customer.

Here again the curve drawing wattmeter can be used to advantage, for the curves will show when and in what amount the current is wasted. When employees discover that an instrument is keeping tally on the consumption and the time when the current is used they are sure to be more careful. Moreover, economizing on current will often turn out more work so that many an installation of heating apparatus can be retained if these meters are installed and intelligent use is made of the records obtained. As soon as the central station manager fully realizes that the curve drawing wattmeter is the best complaint investigator that has ever been placed at his service, as soon as he is fully impressed with the fact that it is a trusty sentinel which will detect any leak or theft any time during the twenty-four hours, the troubles of the complaint department will be greatly minimized and the public will be more fully convinced that central stations are conducted by wise and honest men.

"In The Public Eye"

There are few central station men who question the value of a certain amount of personal publicity within the bounds of their own domain.

This "josh" at R. A. MacGregor, General Manager, of the Connersville (Ind.) Light, Heat & Power Company, recently appeared in the local paper as one of a series of "People in the Public Eye." Though Mr. MacGregor's friends will hardly recognize him, it is an interesting index to the condition of public sentiment in Connersville.

CONNERSVILLE, IND., FRIDAY, JULY 29, 1910.

Connersville People in Public Eye

ROY A. MACGREGOR

"Light seeking light doth light of light beguile."
—Love's Labor Lost.

Electrical Progress Department

Vertical Carbon D. C. Flame Arc

The flame arc lamp is one of the most efficient illuminants yet developed, and the penetrating quality of the brilliant, golden yellow light is such that even under the most adverse atmospheric conditions, such as those imposed by fog or smoke, it provides a highly satisfactory illumination. The installation of flame arc lamps on 6.6 ampere dc. circuits has not been entirely satisfactory on account of the large and wasteful resistance necessary and the General Electric Company has recently perfected a new lamp designed for connection directly in such a circuit without any change in the system, simply replacing the other lamps where desired.

Although these lamps are now made for direct-current service only, they find a wide application, being suitable for lighting squares, parks, or special store sections in cities where the 6.6 ampere series luminous arc, or the series dc. enclosed 6.6 ampere system is used for street lighting. They are also adapted to multiple and multiple series service.

The lamps are equipped with a light opal globe and a 26-inch diffuser. The casing, which is of copper with black oxidized finish, is made up in two sections so arranged that, by telescoping the sections, the mechanism is exposed.

The arc is held in the same position at all times, as the mechanism is of the focusing type. With the exception of this feature, the lamp mechanism is similar to that used in the standard General Electric dc. enclosed lamp. The lower carbon holder is provided with a ball and socket joint to allow perfect alignment of both carbons. A life of about 20 hours is obtained with one trim when the lamp is adjusted for 6.5 amperes.

Particular attention is called by the manufacturer to the increased illuminating efficiency obtainable—an average of 2800 mean lower hemispherical cp. is claimed to place this lamp on a basis 50 per cent higher than the average flame lamp manufactured in this country or abroad.

This increased efficiency, combined with the fact that lamps may be connected directly in the circuit, offers the central stations operating direct current an opportunity to take over the lighting of foundries, wharves and many other classes of similar service.

The Quad Electric Stove and Fireless Cooker

The application of electric heat to a "fireless cooker" is a new phase of the electric heating situation which promises good returns to the lighting companies. The A. L. Sykes Manufacturing Company, of Cincinnati, in

perfecting the Quad Fireless Cooker, has made a portable, sanitary and convenient piece of apparatus which can be used to increase the revenue from present customers and as an excellent argument for new business.

The illustration shows the device during breakfast preparation. The housewife has cooked the cereal during

the night, has heated the coffee and is ready to cook the ham and eggs, chops or steaks or whatever meat is desired. The heat thus created, it is claimed can be saved for further use and utilized in cooking the mid-day meal. As soon as the utensils and food are brought to the proper temperature, the cooker is closed and left to do the actual cooking without attention, while the housewife goes about her other domestic duties, calling, shopping or what she will.

The principles of fireless cooking have been endorsed by the United States Government, and its advantages of economy and convenience are increasing its popularity in all parts of the country. By the Quad apparatus the cost of using electricity is very low as one kilowatt hour per day is claimed to be sufficient for the three meals of an average family.

The heating disk used is the regular 8-inch plate made by the American Electrical Heater Co., of Detroit, and carries that company's usual guaranty. The total weight of the cooker complete is 35 pounds, but the top weighs only 9 1-2 pounds and can easily be removed and replaced.

The manufacturers propose to sell the Quad Cooker through central stations alone and a special selling plan has been created to further this idea which includes free demonstrations to residence consumers and other means of increasing the demand in the domestic lighting districts.

Ampere-hour Meter for Auto Charging

A scheme worthy of note, which enables the garage man to know the exact amount of current which is stored in his batteries, is shown in the accompanying illustration, the reproduction of a photograph taken in a Brooklyn garage. The charging board is equipped with a Sangamo ampere-hour meter, which records by the movement of the hand on the dial the ampere hours, which go into the battery. When a battery comes to this garage to be charged, the odometer is

first consulted, and then the ampere-hour meter dial is set to the approximate number of ampere hours necessary to replace the energy previously expended, according to the number of miles shown on the odometer. As the battery charges, the hand on the auto meter revolves toward zero, and when in contact with the pin at zero a circuit is closed on a signal bell. The attendant hearing this signal consults his voltmeter, and if the voltage shows the battery to be charged it is removed from the line. This arrangement enables the garage owner to have a positive method of charging his customer for current put in the battery, and the customer pays for exactly what he uses.

This instrument is known as the Sangamo "ampere hour meter" and is manufactured by the Sangamo Electric Co., Springfield, Ill.

New Concrete Posts

This photograph shows the artistic after-dark effect of the decorative concrete lamp-posts manufactured by The Pettyjohn Company of Terre Haute, Ind. This installation is located in the same city and is said to be one of the first concrete systems ever installed for tungsten lighting on a principal business street.

Each column supports five 100-watt tungsten lamps. The four downward hanging lamps are inclosed in ten-inch globes and the central upright lamp in a fourteen-inch globe. The columns are about fifty feet apart.

In the manufacture of the columns, which are of Doric design, waterproof granite concrete was used. The shaft portion is nine feet long, eleven inches in diameter at the base and nine inches at the neck, and rests on a base sixteen inches square with a four-inch plinth. Surmounting the Doric capital is a fourteen-inch abacus, on which rests the four-arm head seventeen inches in height. The spread of the arms is three feet and to the center of the top globe the height is twelve feet.

Corrugated steel bars are used for reinforcing the arms as well as the main portion of the column, and in addition there is placed in the center of the head a condulet box from which the iron branch conduits extend through the concrete to the points where the holders are attached. From this condulet box a short conduit also extends to the holder for the top lamp.

In erecting the columns a sub-base of concrete was placed below the grade line through which the conduit carrying the wiring and the other reinforing bars were brought up through the core of the column and joined with the reinforcing bars and conduit already placed in the head. After these connections were made and the cement mortar joints, by which the columns were set together, had thoroughly

hardened, the central portion of the column was filled with thin concrete, and the entire column was bound as one solid piece to the sub-base, thus making a very strong and rigid pillar.

The special claim of the manufacturer for the superiority of this column is that it is more artistic and durable and less expensive in installation and maintenance. The fact that it is made entirely of crushed New Hampshire granite insures its beauty increasing with age rather than deteriorating.

An Always Level Hood

The Federal Electric Co. of Chicago has introduced a new type of street hood which can be suspended from the line without danger of its swinging or hanging off the level. It is supported as shown in the accompanying cut from three equidistant points, affording ample protection against the breakage of tungsten lamps no matter what the storm.

Apparatus for Hotels.

Publication No. 3968, recently issued by the General Electric Company, should be of considerable interest to managers of hotels and restaurants, as it deals with a subject which is being given a constantly increasing amount of attention by hotel and restaurant people.

The publication illustrates and describes various appliances designed especially for hotels and restaurant use, such as broilers, roasting and baking ovens, toasters, plate warmers, stock kettles, automatic egg boilers, etc., etc.

N. E. L. A. Handbook Review.

It is announced that a new edition of the N. E. L. A. *Electrical Solicitors Handbook* has been prepared and is now ready with numerous changes and improvements in the text and many additions. Much of the new matter is devoted to the electric vehicle and illuminating engineering.

Sold to Doherty Company

It is announced that Henry L. Doherty & Company have purchased the gas and electric properties in Bristol, Tenn.

The New Business Department will be in charge of Mr. A. L. Young, formerly of Montgomery.

Wanted—"Cupid" Hutchinson wants a position, one where real merit counts and pays. Have had fourteen years experience as New Business Manager for gas and electric properties. If your gains are not what you think they should be, possibly I might help you boost them. Address, F. R. Hutchinson, 122 South New Hampshire Avenue, Atlantic City, N. J.

Wanted—An expert light and heating device solicitor to work in this city. Salary $70 per month. In answering write fully in first letter stating age, experience and references. Reply to Jackson Railway & Light Company, Jackson, Tennessee.

Here is an opportunity for any man who has the experience and the sand and knows he can make his future *now*. A central station in a small but thriving New York state city needs a salesman. Make application, stating experience, salary required and send photograph addressed New York State, care Selling Electricity, 74 Cortlandt Street, New York City.

Grooved Skeleton Letters

Angle Iron Frame 677 Lamps

Electric Signs Like This One are Erected by Us in Any Part of the Country.

HALLER SIGN WORKS (Inc.)

704 So. Clinton Street, Chicago

In writing to advertisers, mention "Selling Electricity."

Design "C."
G-M (Godiney-Marshall) Lamp

The Advantages

of a single light source in a reading lamp are immediately appreciated by the discriminating buyer.

Yet

This is only one of the many features of

The G-M Lamp

The Electric Motor & Equipment Co. NEWARK, N. J.

Let Electricity Do Your Family Washing

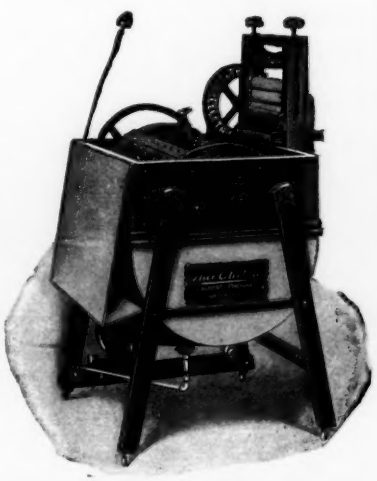
Why not join the other 1543 electric light company officials who are having their washing done with a

THOR

Surely you cannot hesitate to at ***least investigate*** the merits of the ***THOR*** in the face of such evidence as this. If you want to have your family washing done more thoroughly—in less time—at a lower cost—at least give the ***THOR*** a trial at our risk.
And every ***THOR*** means another motor.

This Coupon Brings FREE Booklet

This is ***your*** opportunity to cut down your fixed household expenses—and you are the man that pays the bills. Detach and mail us the coupon ***now.***



COUPON

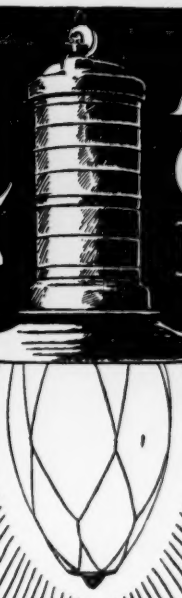
Hurley Machine Co. **29 S. Clinton St., Chicago.**

Gentlemen: Without further obligation on my part send me Free THOR Electric Home Laundry Machine Booklet.

Name .....

Address .....

General Electric VERTICAL CARBON Flame Lamp



Trial installations, continuing for more than a year have thoroughly tested this lamp in many parts of the country under all conditions of commercial service. One of the largest trial installations was in the streets of Boston, where fifty of the Series D.C. Lamps have been in successful operation for over a year. The reports on all installations prove their "perfectly satisfactory operation" on all commercial circuits. All reports comment favorably on the great reliability and durability of the lamp in addition to its exceptional efficiency.

The Most Efficient Lighting Unit in the World

The series lamp has an efficiency of .178 watts per mean hemispherical candle-power and the multiple type an efficiency of .252 watts. This most remarkable efficiency is due, in a large measure, to the wonderful lower electrodes—a carbon tube with a specially prepared core, the successful result of an extensive research covering a period of years. Two other striking features of this electrode are that it is *positive* and feeds *upward*. In addition, the mechanism is so arranged that arc *remains always in the same position.* Upon request our engineers will explain in detail the many exclusive features of this new type of lamp.

General Electric Company

Principal Office
Schenectady, N. Y. 2702

In writing to advertisers, mention "Selling Electricity."

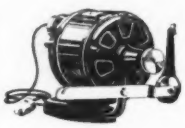
It's Easy To Sell Your Juice

Simply offer the consumer electrical devices which will appeal to him from his point of view, and which will at the same time materially increase your day load.

For the three devices shown below, we give the reasons why they appeal to the consumer—why they are easy to sell.

The Westinghouse Electric Iron

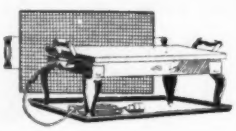
enables you to do your entire ironing without changing irons; without walking to and from the hot stove; without the enervating heat from the stove You can use it in any room in the house, or out on the porch where it is cool. This iron is heated in a few moments, and maintains a good heat as long as you desire.



The Westinghouse Sewing Machine Motor

does all the foot-work formerly done by the seamstress. It is a very simple little motor, and will not easily get out of order. Made to fit any machine and can be attached or detached in a couple of minutes. A brake controlled by the foot enables you to sew at any desired speed

The Westinghouse Toaster-Stove



enables you to prepare a dainty lunch or substantial breakfast right on the dining table. A grid is provided for toasting and a plate for frying eggs, griddle cakes, etc. It is a handsomely finished little device, and all danger of burning or marring the table varnish or cloth is eliminated by placing it on the tray provided with each one.

Write for proposition; ask for our series of "Ad Books" and samples of our advertising literature.

Westinghouse Electric & Mfg. Co.
Pittsburg, Pa.

Sales Offices in all large Cities

Now Is the Time— Simplex the Iron

To satisfy your customers—to lead the sale of other devices—to increase the earning capacity. Let us help you tell your customers about the Simplex Electric Household Helps.

Write for Plan K "2."

This Trade Mark

SIMPLEX QUALITY

Stands for Goods Made on Honor

SIMPLEX ELECTRIC HEATING CO.

Cambridge, Mass.

Monadnock Block, Chicago
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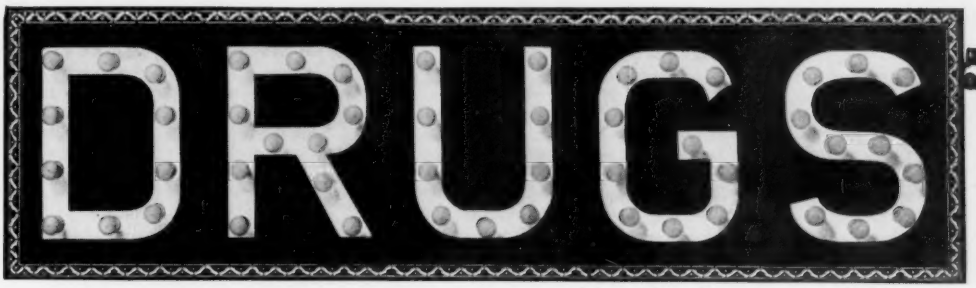
A. & W. Stock Signs
For Central Stations



Solid Background Porcelain Enamel Electric Signs
NOT SECTIONAL

24 Different Kinds Carried in Stock Ready for Immediate Delivery

Any live commercial department solicitor can place a dozen of these attractive signs in one week.

Beautiful blue porcelain enamel backgrounds with white porcelain enamel letters and border.

NET PRICES TO CENTRAL STATIONS

Double Face Signs	14-Inch Letters	3 Lamps High
Bar,	$31.00	
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Cafe,	40.00	
Soda,	40.00	
Hats,	40.00	
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Drugs,		51.00
Hotel,		51.00
Cigars,		61.00
Garage,		61.00

Send for miniature porcelain sample sign and blue prints with prices on full line.

The A. & W. Electric Sign Co.
CLEVELAND

Overtime and Its Cost

Have you ever noticed factory conditions in your locality. Suppose some department that is rushed is located some distance from the engine room. Did you ever figure out for this manufacturer what it is costing him to run all the idle shafting, belts, pulleys, etc. between the two places. It will surprise him to know it amounts to almost as much as to run the entire plant at its full capacity. Then it's the same thing during dull seasons when all his machines are not working. It's easy enough to show him it's costing him enough for wasted transmission to

Equip His Machines with Fort Wayne Motors

that would decrease his cost of operation nearly 50 per cent and increase the quantity and quality of the machinists work.

Of course you can say this much for almost any motor on the start, but if he is particular and wants the best, you better show him the many superior points of Fort Wayne Motors. You're sure of a satisfied customer then.

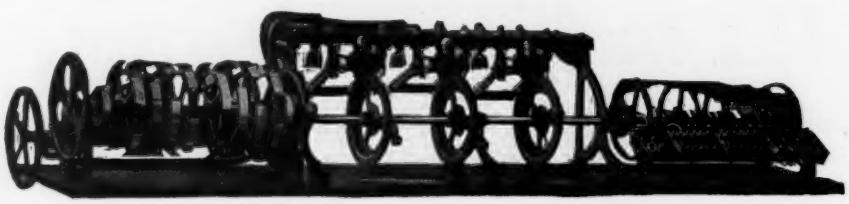
We have a bulletin "Motor Drives" that will give you some valuable information and shows some of the many applications of our motors. Send for it today and get posted on the subject.

Fort Wayne Electric Works
1403 BROADWAY
Fort Wayne, Indiana

M4

RECO FLASHERS

are used by the largest sign manufacturers. WHY?



Because of their flexibility of adjustment, simplicity and general serviceability. Correct electrical effects and satisfaction guaranteed. Large variety. Eleven distinct types. (Approved by the Underwriters.) Have you received our new bulletins?

Reynolds Electric Flasher Mfg. Co.

Largest Manufacturers of Flashers in the World

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The "IMPERIAL"

A Portable Vacuum Cleaning Machine combining efficiency, practicability and economy. Can be attached to any electric light socket.

"The only High-Grade, Efficient Machine on the Market." Guaranteed. A Dividend Payer for Central Stations. Growing concerns and responsible parties wanted as agents. Exclusive territory given. Send for Catalogue and particulars. M'f'd in 2 sizes.

Price, $100.00 and $75.00 Complete.

EMPIRE VACUUM COMPANY,
112 West 30th Street, New York.
District Office: 702 Postal Telegraph Building
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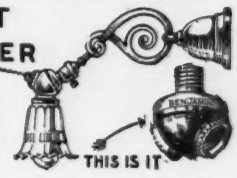
BENJAMIN
TWO-LIGHT PLUG CLUSTER



For Doubling the Capacity of Your Sockets Without Extra Wiring

It just screws in—and the work is done. You have one light, but want two. Or you want to run an extra wire to another point for connecting some electrical appliance — fan, heater, curling-iron, flatiron, chafing dish, etc., and still keep your light burning. *You need not rewire the place to do it.*

Benjamin Plug Cluster Does the Work of Two Sockets.

For sale by all Electrical Dealers or sent postpaid on receipt of price, 75c.

BENJAMIN ELECTRIC MFG. CO.
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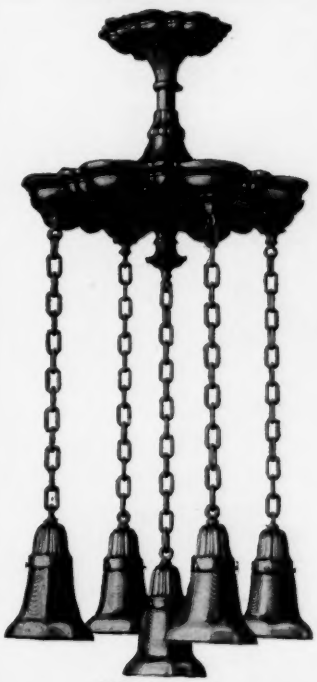

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Manufacturers of

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"WIRE TYPE" (Single Filament)

100 Watt

Tungsten Incandescent Lamp

FRAGILITY DONE AWAY WITH

The Latest Development in the Art—**Strong, Durable** and **Uniform.**

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Weight 35 lbs.

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1—Can be lifted by the little finger
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Five men with experience in Central Station Commercial Work.

Also—Five men who have been actively engaged in the operation of Central Stations.

In making application, give full details as to experience, where last employed and references. Address

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FEDERAL ELECTRIC COMPANY

YOUR DRUGGIST

Wants an Electric Sign

During the last month, we have received a greater number of inquiries from Druggists than all other lines of business combined.

Federal porcelain enameled steel Drug Signs are business getters.

The popular mortar sign for the price has no equal as a distinctive, brilliant and attention compelling sign.

Two sizes, 39"x30"—15 sockets on each side and 51"x42"—25 sockets on each side.

Federal Sectional Letter Signs are the most attractive lamp letter signs made. If you cannot install an overhanging sign, vertical or single faced arrangements of these enameled steel letters will make a more brilliant display than any other type of sign.

We carry 14, 16 and 24-inch letters in stock. More sectional letter Drug signs are in use than all other types of electric drug signs combined.

Panel signs with interchangeable enameled steel panels are very effective. With reflector arms and tungsten lamps, they compel attention on the most brilliantly lighted street. We make a variety of shapes and sizes.

Go after your local druggists on the sign proposition. They are after the trade on the streets and you can help them get it with an electric sign.

Write us now for prices on any of the above

Federal Electric Company

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